

The Mining Journal

Established 1835

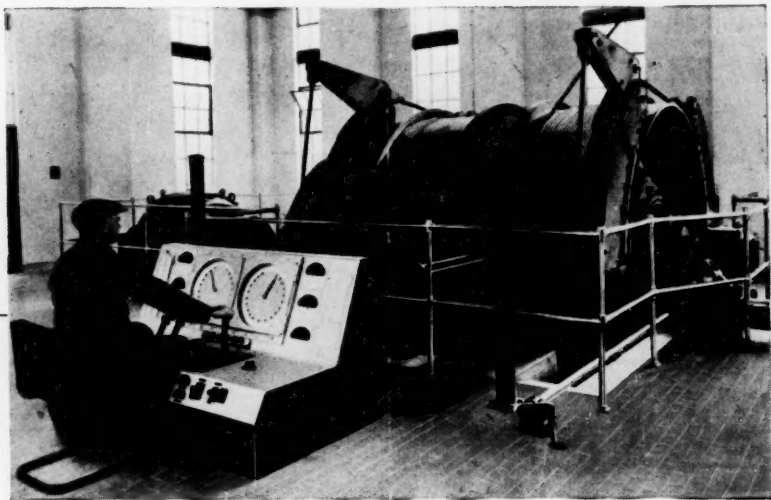
Railway & Commercial Gazette

Vol. CCXXXIX No. 6117

LONDON, NOVEMBER 14, 1962

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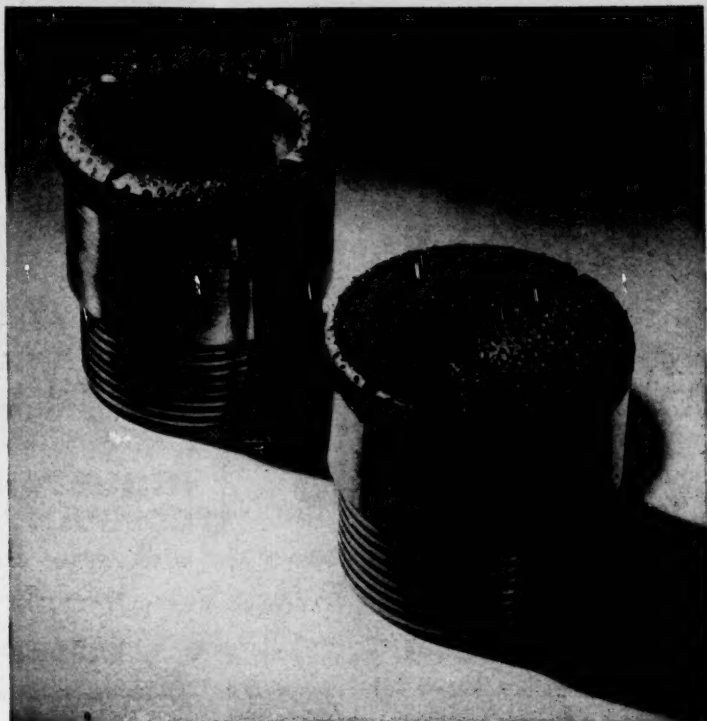
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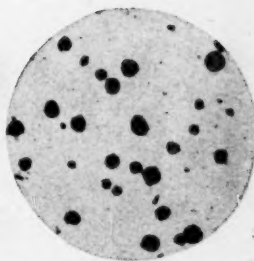
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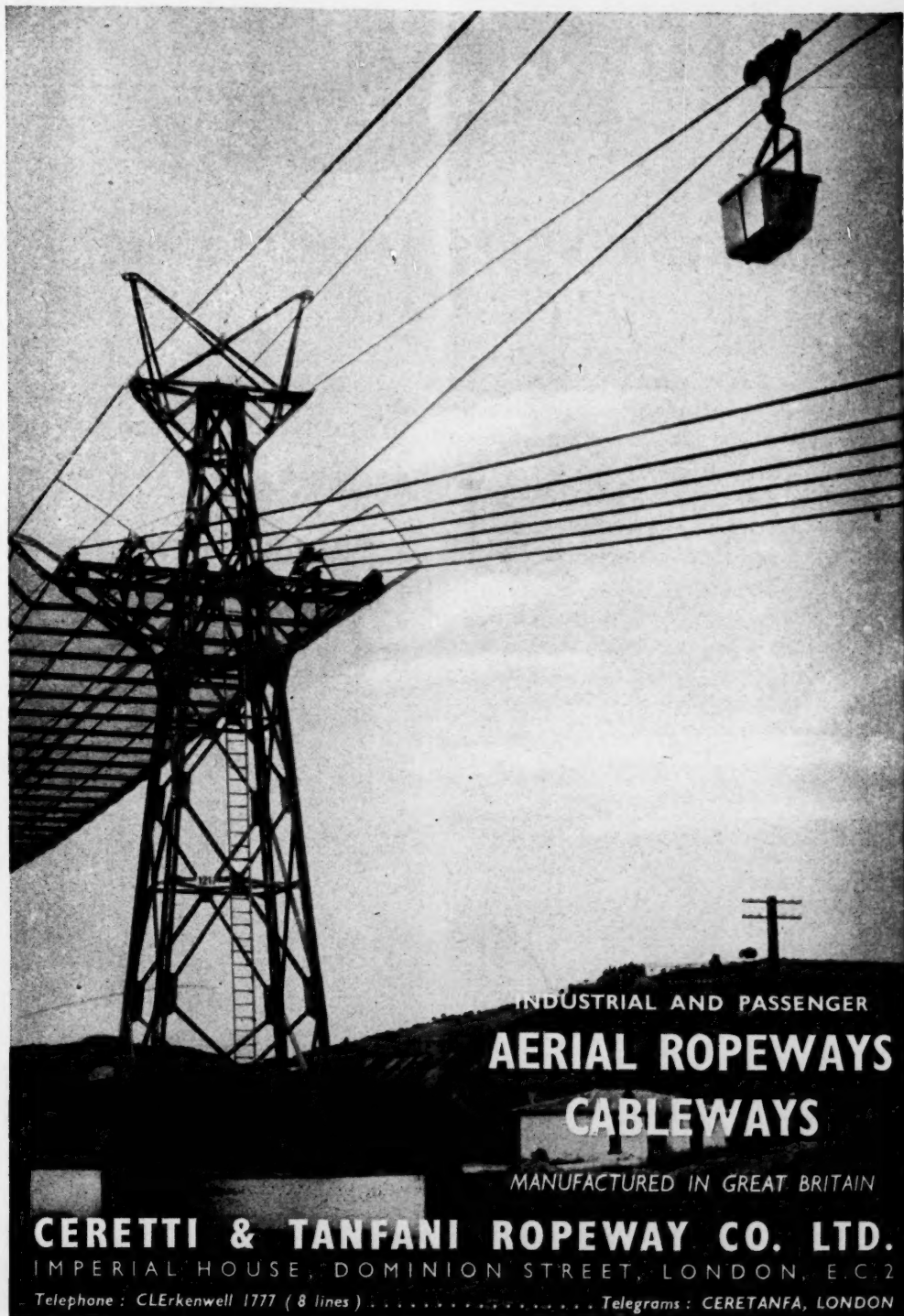
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All these belts carry coal, starting from the jetty cranes and delivering to bunkers and consumption points throughout the plant. One belt operates on a travelling bridge. Ash belts, also by Silvertown, will be installed at a later stage.

Photographs by courtesy of British Electricity Authority.

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The Mining Journal

Established 1835

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NOTES AND COMMENTS

Steel Works For Sale

Only a few weeks ago the compensation to be paid to the former owners of the steel works now the property of the State was "finalized" at approximately £246,000,000. Now according to the present plans of the Government these same plants are to be offered for sale to the highest bidder, soon after Easter. Re-transfer to private ownership is likely to be a much more complicated process than was the original acquisition of the properties by the late Government. Then there was no haggling. The buyer fixed the price and the seller had no option save to accept what was offered. Now there is to be a free market as between buyer and seller. If the former owners or any others are prepared to bid for the works they will have to strike a bargain with the Realization Agency, and the Treasury retains an over-riding authority to approve or reject the agreed terms.

Some of the former owners, as for instance the Staveley Coal & Iron Co. contemplate re-purchase on equitable terms, but it does not follow that all will do so. Buyers will have to take into account the fact that they will have to operate under even more rigid controls than heretofore. The Minister has power not only to fix selling prices and therefore profits, but will also have authority to control development schemes, and to operate plants in competition with private owners. And finally, the investor will have to take account of the threat of the Opposition to re-nationalize the industry at the first opportunity with or without further compensation.

No time limit is set for the operation of the Realization Agency. The Government has in fact admitted that it may take years to complete the process of de-nationalization and in the meantime all the uncertainties of transition will continue to bewilder and baffle the operators of the steel industry under dual ownership.

The Problem of Copper Prices

The news that the African miners in the copperbelt have decided to return to work, leaving the issues on which they struck in the hands of a conciliation board, will be welcome even while it serves to remind us how precarious in some

respects is the present supply and price of metal. Everywhere, except in the case of U.S. producers, copper prices have been sensationally advanced since the beginning of the year, due to the dominating position which arrangements between the United States and the Chilean Government have made possible for the latter—a position somewhat resembling the situation in the silver market where the Mexican State Bank largely controls the United States and therefore world prices.

Chile largely failed to sell the 20 per cent of her output, not earmarked for the U.S., at their minimum figure of 54.54c. per lb., f.a.s. Chilean ports, and eventually cancelled the agreement. On February 12 last Chilean legislature empowered the President to fix from time to time the amount of copper which might be exported from the country. Under this law the Banco Central was empowered to acquire all the copper—refined, electrolytic, standard and blister—produced by the American companies operating in the Republic (Chile Exploration, Andes Copper and Braden Copper), and to export and sell it. In fact the Chilean Government having no world organization for selling copper found itself obliged to employ the Anaconda and Kennecott sales organization and on June 14 last the price of 35.50c. per lb. was agreed on, at which price 107,526 tonnes were sold between June 14 and August 31, some of this no doubt representing accumulations between February and May last.

In a detailed report furnished to the Metal Department of Bache & Co., by an agent in Santiago, production by these companies is estimated at 357,000 tonnes for the current year which compares with 489,906 tonnes in 1944 and an average of 438,576 tonnes for the ten years 1941-1950. In addition, the recently started government custom smelter at Paipote, near Copiapo has a capacity of about 12,000 tons annually, contributed by the medium and small producers in Chile, in addition to which some 20,000 tons of copper concentrates, etc., was exported annually in normal times making, say, some 32,000 tons produced independently of the three major American concerns. With the new expansion projects negotiated between the Chilean Government and the three great American companies it is

hoped that output may recover to something like 500,000 tons a year by 1955.

In contrast to pre-war conditions when the great bulk of Chilean copper was exported to Europe, currently about 90 per cent goes to the United States, which imports roughly 40 per cent of its requirements leaving 60 per cent to be produced from domestic mines, mainly at a ceiling price of 24½c. The effect on the copper industry of the United States emerging as a buyer of Chilean copper at any price has been to increase enormously the price of copper to the rest of the free world, and to raise the African, Canadian and Mexican copper prices to little short of that which Chile has demanded and secured, averaging probably about 33.50c. as against the Chilean figure of 35.5c. However the impact of this situation on the economics of the industry is still far from being potentially exhausted, as Chile has apparently entered into no obligation to maintain present prices and can raise or lower them at any time as they may judge advisable.

We look in vain for any evidence of consistent policy by the government metal controllers in the United States. What has been done in copper seems to be the exact opposite to the policy pursued in regard to tin which was heavily beared by the R.F.C. administration despite the report of the American tin mission just published that the tin mining industry in Malaya is rapidly depleting stocks available under present price levels. Nor should it be overlooked that the immense enhancement of copper prices has led to much unrest among miners, particularly in Northern Rhodesia, Chile and Mexico, since the strikes have generally been for an increase in wages comparable to the increase in profits made by the companies as a result of the abnormal increases in the price of the metal.

Among several of the chief industrial metals we have of late witnessed heavy falls and it is by no means certain that lower levels may not still await us. But the copper price remains at its apex. The copperbelt strike has suddenly reduced world supply by something like a month's output, say 20,000-25,000 tons, and has emphasized once more the wide scarcity of supplies of this often indispensable metal. Should the success of the Chilean price experiment encourage that government to demand a further levy on the economy of industrial nations, this would undoubtedly hasten the progress of substitution of aluminium, which is already threatened on a big scale, and which has led to plant extensions which might place the new metal in a position of over supply and consequently result in a further cut in prices.

Whether the Republican Administration in the United States will seek to change or modify an economic policy the effect of which has certainly proved inimical to the interests of other members of the United Nations group remains to be seen, but we doubt if the Democratic Administration's policy with regard to copper has given much satisfaction in circles outside the mining interest to any country except Chile.

The Hydraulic Transportation of Coal

A programme of scientific research aimed at obtaining a "sufficiently full understanding" of the peculiar problems relating to the transportation of coal by pipeline has been inaugurated by the National Coal Board. This complete departure from conventional handling methods was announced by Dr. W. Idris Jones, Director-General of Research of the N.C.B., at a two-day conference on the subject held in London last week. The National Coal Board considers that hydraulic transportation is a process likely to be of specific interest to the coal industry.

Should the method be found practicable, it might prove an effective means of avoiding those hazards associated

with the production of large quantities of dry coal dust, and would eliminate the need for extensive mechanical conveyor systems. On the one hand, coal dust can lead to serious ill health if it is not controlled, and on the other hand can create fires and explosions. Considerable efforts are being made to counter these dangers, and under a system of hydraulic transportation the elimination of coal dust in underground mineworks would greatly reduce the possible attendant dangers. Under such conditions the dangers could themselves be erased with greatly reduced effort.

The hydraulic process can be visualized as operating from coal face to shaft bottom, but the possibility of pumping a mine output to surface is scarcely less attractive. Where the output of many collieries is limited by the winding capacities of their shafts, a factor which may only be increased through costly alterations, it is feasible to believe that by no other alteration to a shaft beyond the installation of a pipe not exceeding a foot in diameter, it might be possible to pump the entire output of a large colliery to surface. Here hydraulic transportation might again conceivably provide an effective alternative to other forms of haulage, not only in short movements, but in longer hauls from the coalfields to large population areas.

Hydraulic transportation of coal is not, of course, a completely novel method of transportation and it will be remembered that in this country coal was pumped 660 yd. in Hammersmith prior to the first world war. However, it is only recently that interest in this method has been revived by experiments of hauls of small coal and coal slurry over a minimum distance of three miles in both France and the United States.

Engineers of the British coal industry, however, are more interested in the transportation of large coal. As this matter presents an entirely different aspect to the system, the N.C.B. can only contemplate the use of hydraulic transportation if operating conditions can be specified which will provide "reliable and technically satisfactory" performance and the minimum costs. A better understanding of the process and of the associated machinery are therefore regarded as desirable, for large coal must not be degraded by the handling process.

A Footnote to Tin History

Events in Bolivia have been responsible for many surprising claims and propaganda statements which probably owe their origin largely to the blurring of the historic background of tin history during and since the second world war, since when a generation of publicists which "know not Joseph" in respect of tin history has appeared. Thus in an article entitled: "The Bolivian Tin Industry," published in the *Times Review of Industry* for November we read, "Until the development of the tin mines in Malaya and elsewhere in the world, Bolivia had almost a monopoly, and for a quarter of century its output of tin ore ruled the market." As a matter of fact in the early sixties, when we have no data of any Bolivian output, Cornwall was producing about 10,000 tons of tin a year, and this figure is said to have amounted to about 50 per cent of the world's total, so that the Cornish tin output completely controlled the tin market, according to the late Professor Henry Louis in a review of the tin industry published about 1900. Moreover, for centuries Bangka and subsequently the Malay Peninsula had been regular producers; but while the Cornish production declined steadily subsequent to the sixties of last century, output from the Malayan Peninsula and the Dutch East Indies steadily increased.

In 1890 Professor Louis gave the world producers as follows: the Straits, 32,400 tons; the N.E.I., 11,280 tons;

Australia, 9,600 tons; Cornwall also 9,600 tons and Bolivia, 1,670 tons. By 1898, the last date for which world statistics were then available, he gave the Straits Settlements as 47,400 tons, the N.E.I. 14,270 tons, and Bolivia 4,500 tons; by which time the Australian total had fallen to 5,500 tons and that of Cornwall to 5,460 tons. The average for the three years 1896-1898 was: the Straits, 60.6 per cent, the N.E.I. 19 per cent, Australia 7.9 per cent, Cornwall 6.1 per cent and Bolivia 6 per cent. The big increase in Bolivian production belongs to the twentieth century and reached its maximum in 1929 with a total of 46,338 tons.

South Africa

(From Our Own Correspondent)

Johannesburg, Nov. 3

South Africa officially entered upon its atomic age on October 8 when the Prime Minister, Dr. D. F. Malan, pressed the button which started up the first uranium plant at the West Rand Cons, near Krugersdorp. In his speech on this occasion, Dr. Malan stated that the capital expenditure programme on uranium plants will be in excess of £40,000,000 and once the programme is in full swing the annual revenue will be of the order of £30,000,000.

It was appropriate that Mr. C. S. McLean attended this function in his capacity of President of the Chamber of Mines. It was in 1920 that the first investigations were made into the possibilities of the gold ores of the Witwatersrand as a source of radio-active minerals. The first identification of these was made in 1923, although too low-grade to be of importance as a source of radium it was considered possible that they might prove a major source of uranium. It was in this year that Mr. McLean was appointed manager of the West Rand Cons, and he found in an investigation of the reefs on the property some indications of low-grade ore in the Bird reef series. In August 1931 a small incline shaft was sunk on this horizon. This can be said to mark the start of the uranium industry.

Almost simultaneously with this ceremony, an official announcement was made that a fourteenth mine is to join the ranks of the uranium producers—Vogelstruisbult G.M. on the Far East Rand, where the Kimberley reef deposits will be treated. This is by no means the end of the list and further announcements can be expected before long. Indications are that the total number of mines will be in excess of the twenty mark before the present programme is completed. So far as can be gathered, without falling foul of the Atomic Energy Act, the scheme will not be limited to those mines with large deposits of uranium ore sufficient to justify large-scale expenditure on individual recovery plants. There are a number of properties underlain by modest amounts of the appropriate horizons and it is understood that plans have been worked out whereby they will contribute residues to joint plants or to those of adjoining major producers.

On previous occasions I have stressed the significance of uranium production as a factor in lengthening the working lives of mines already brought under the scheme—Randfontein Estates being a classic example. This latest development can be of great importance indeed, as the properties involved, although their names cannot be divulged at this stage, include several which are well over their peak as gold producers, and can be included in the category of "dying mines," both on the East and West Rand. The only disappointment is that, so far, there is little prospect of the Central Rand coming into the picture.

An important development in the gold-uranium outlook is the decision of Stilfontein G.M. to go ahead immediately

with its plans to increase milling capacity to 80,000 tons a month by the end of next year, instead of several years hence as was originally planned. This acceleration of the programme has been possible as a result of good values and high percentage payability—over 90 per cent for the September quarter. Coupled with this, the capacity of the original uranium plant at present under construction is to be doubled at an additional cost of £1,500,000, which will be met by loans from the Atomic Energy Board.

Linked with the uranium programme is the production of sulphuric acid from the pyrites present in certain of the gold reefs. Until recently, this work was being undertaken by certain of the uranium mines. Government Areas, however, is to recover pyrites from the Black reef series, which will be disposed of for acid-making. At the present stage, relatively large quantities of acid are used in the uranium plants, but it is confidently expected that as the technique is improved or modified the demand for this purpose will decline. This, however, is not expected to affect the general demand for sulphuric acid. South African soils are sadly lacking in phosphates, and the world shortage of sulphuric acid needed for the conversion of rock phosphate into superphosphate has had an adverse influence on local agricultural production. According to authoritative sources the fertilizer industry can absorb as much acid as the mines can produce, and that should any excess be available, a ready export market can be found for it.

ORANGE FREE STATE

Good progress is being maintained with the opening up of the Free State gold mines. Trial runs are being made with Western Holdings' reduction plant using development rock. It should not be long before official production starts, building up to 50,000 tons of ore a month. In the meantime, a start has been made with extending the plant to handle 75,000 tons a month. During the September quarter, the development footage on reef rose to 1,280 ft., of which 91.41 per cent proved payable averaging 782 in.-dwt., which augurs well for the future of the property. Both the Freddie North and South reduction plants are almost ready to get under way, and should be milling development rock any day. The second sections of both plants, bringing the capacity of each to 55,000 tons a month should be completed by the end of the year, and full-scale operations undertaken early in 1953.

Free State Geduld's progress is being held up by the flooding of No. 2 shaft. Work has started to recover it by means of a large-scale cementation programme, but it remains to be seen whether this will prove successful, and in the meantime Anglo American engineers are not committing themselves to any comments. The magnitude of water-controlling operations in the Free State is clearly shown in recent reports from Harmony G.M. During sinking operations during the year ended June 30, an average of 15 pockets of cement were injected per foot sunk at the Ventilation shaft and 13 pockets at No. 3 shaft. At No. 3 shaft, 195 ft. were sunk during the three months ended September 30, approximately 73 per cent of the time available for sinking being absorbed by cementation.

Yet another major mine is under way on the Far West Rand—Hartebeestfontein G.M.—lying immediately south of Stilfontein and coming under the technical control of Anglo-Transvaal Consolidated. It will mine an area of 4,889 claims. Preliminary planning for the sinking of two shafts and the construction of surface plant has reached an advanced stage. The area is underlain by the Vaal reef series. Boreholes in the western portion have given encouraging results at depths around 6,000 ft. In the eastern section, the reef lies between 2,000 and 3,000 ft., where payable values have also been disclosed.

Canada

(From Our Own Correspondent)

Toronto, October 20

High wages, and the increasing cost of everything required to carry on mining operations, have combined to inflict mortal wounds upon the gold mining industry. Being denied the compensating factor of an increase in the price of gold in keeping with the rise in wages and in other commodities, two more gold producers are numbered among the casualties. Negus Mines in the Yellowknife area has completely closed down—the one ray of hope being that at some future time the mine may become revitalized through an increase in the price of gold, or through a decline in wages and commodity prices (in other words, depression). Likewise, Chesterville Mines in the Larder Lake district of Ontario, after producing some \$12,680,000 has closed down, and is preparing to abandon its underground workings. These are regarded as ominous signs for gold miners.

McINTYRE-PORCUPINE IN THE BALANCE

Despite this basic adverse condition, labour unions at Kirkland Lake and Porcupine are pressing for higher wages—specifically at the Lake Shore and the McIntyre-Porcupine. These demands have come in face of the fact that Lake Shore, once the second largest gold producing mine in Canada, has so far during 1952 operated at a loss. On the other hand, McIntyre-Porcupine is being operated at a moderate profit, but with shareholders inclined to believe the better part of wisdom would be to close the mine and await more favourable economic conditions under which to mine the gold. As to this, the directors have expressed their wish to continue operations. The extent to which the labour union presses its demands for higher wages may determine the course to be taken by the company, having in mind a course of justice to both employees and shareholders alike. One significant development occurred last week in British Columbia. The labour union representing the workmen at Bralorne Mines made demands for higher wages, but the rank and file of union membership voted against a strike in support of the demand.

LARGE DEPOSITS OF LOW GRADE URANIUM ORE

Developments in Northern Saskatchewan continue to disclose increasing quantity of uranium ore. A significant feature is the trend toward lower grade deposits, but particularly large tonnage. Miners recognize much greater stability in the larger and lower grade deposits than in narrow high grade veins. With large tonnage in sight it is possible to lay long range plans on a big scale. As a result, there is considered to be good prospects that the new field may give Canada a place in the forefront of nations as a source of uranium—the keystone in the new age of atomic energy.

A decline in price and demand for base metals is giving rise to revised estimates of earnings of the producers of lead, zinc and copper. While operators have usually looked toward the New York market for guidance, there has been recent evidence that London has regained a place of vital influence, and that the London price may become the world price. In many respects the New York market is recognized as representative of the producers' market, while that of the London Metal Market is representative of the consumers' market. That being so, the producers of base metals in Canada look toward London quotations as the yardstick with which to measure plans and calculations in the future.

Brazil

(From Our Own Correspondent)

Teresopolis, October 22

President Vargas has approved the report and recommendations of a Special Commission, appointed to examine the contracts for exploiting the manganese reserves of Morro de Urucum, in Mato Grosso (see *The Mining Journal*, June 9, 1950).

The Urucum mines are situated on the River Paraguay, 12 miles south of Corumba, the capital of Mato Grosso, and were exploited by a Belgian company from 1906 until the first world-war, when operations were suspended. The existing contracts, which are now being revised, are those granted by the State of Mato Grosso to Sociedade Brasileira de Mineracao Limitada (Sobramil) and by the latter to Companhia Meridional de Mineracao. Sobramil belongs to the Abdulla Chamma group (closely connected with the Jafet interests), who took over the Belgian company's installations in 1940 and began exporting on a small scale over the River Paraguay. In 1945 the Company was obliged to cease exporting owing to transportation difficulties. It had no suitable river boats to carry its cargoes and the railroad had not yet been extended to Corumba.

AMERICAN INTEREST IN EXPLOITATION

Meridional, a subsidiary of United States Steel Corporation, acquired the manganese deposits of Morro da Mina, in the Lafaiete district of Minas Geraes, in 1920. The mines have been extensively exploited to maintain shipments to U.S.A. and the reserves are now reduced to some 2,000,000 tons of high grade ore.

Sobramil recently obtained a loan of U.S.\$30,000,000 from the Export-Import Bank at Washington and the revision of the contracts will facilitate participation of Meridional in large-scale exploitation of the Urucum manganese deposits, ensuring regular supplies to the United States steel industry, while reserving the Lafaiete mineral for the national mills at Rio de Janeiro, Minas Geraes and Sao Paulo. The Urucum mines will be brought under federal supervision and Sobramil undertakes to invest 20 per cent of annual profit in economic developments in the region. When the contract expires the Company's installations, including transport systems, pass to the federal government.

The manganese reserves of Morro de Urucum are estimated at 33,670,000 tons, namely 4,420,000 tons of measured ore, 11,750,000 of indicated, and 17,500,000 tons of inferred ore. Analyses show an average content of 45.6 per cent Mn and 11.1 per cent Fe. The reserves of iron ore in the same district are estimated at 1,310,000,000 tons of haematite, with 55 per cent Fe and 20 per cent Si.

Brazil's manganese deposits are of increasing importance to the American Government, now that the largest world reserves are under Russian control. It is hoped to export between 300,000 and 500,000 tons annually, preferably to U.S.A. With this object Sobramil and its associate will invest U.S.\$35,000,000 in improving mining equipment and transportation. An aerial cable or railway will be installed from the mines to a loading port, to be built at Ladario, near Corumba. A fleet of seventy shallow-draught boats, of 1,300 tons capacity each, will convey the ore over the Paraguay and Paraná Rivers to Uruguayan territory, where it will be embarked on ocean-going steamers.

The Noroeste do Brasil Railway has been extended to Corumba, but high freights and distance preclude exportation through a Brazilian Atlantic port. The same obstacles prevent utilization of Urucum manganese by national steel mills. For these the Minas Geraes deposits, 277 miles from Rio and 107 from Belo Horizonte, are more accessible.

THE DIAMOND INDUSTRY IN 1951.—II.

The Diamond Industry in 1951

By W. F. FOSHAG and GEORGE SWITZER

The Jewelers' Circular—Keystone's Report on the Diamond Industry in 1951 was published at the end of last month and contains a full report on all sections of the industry.

In our issue of last week, the introductory portion of this article gave details of world production of diamonds, and continued to note the deposits and outputs of various territories in the continent of Africa. In this, the second instalment of the article, other diamond producing territories of Africa, as well as certain countries in South America, India and other areas are mentioned, and the article continues by discussing the technology of diamond recovery and those developments which took place during last year in the field of industrial diamonds.

Sierra Leone.—Diamonds were first discovered in Sierra Leone by the Sierra Leone Geological Survey in 1930, when two stones were recovered from a terrace gravel of the Gbogboro stream, near Fotingaia, in the Kono district. Shortly after, two more diamonds were found in the gravels of the Kenja stream, a tributary of the Moa River, near Kpava, in the Kenema district. The Sierra Leone Selection Trust, a wholly owned subsidiary of Consolidated African Selection Trust, was organized and given exclusive rights to produce diamonds in Sierra Leone.

Prospecting has shown that the diamonds appear to have come from a source a short distance east of Sefadu. The deposits all lie within the Bafi-Sewa River drainage system. Mining at present is confined to Yengema-Sefadu area. However, a separate diamond field has been prospected that is related to an old high level terrace of the Moa River. There appears to be no connection between the deposits of the Sewa and Moa River systems, but the Moa River deposits in Sierra Leone are related to those found in the neighbourhood of the major headwater of the Moa in French West Africa.

The headquarters of the mining field is about a mile east of the village of Yengema. There are seven electrically operated pan concentrating plants in operation. Two plants at Koidu have a combined capacity of 330 to 360 cu. yd. per day for treating the rich gravels of the Woyie River. In the Woyie River deposits some remarkably rich areas have been encountered, yielding values up to 250 ct. to the cu. yd. These deposits have also yielded a number of exceptionally large diamonds, including stones of 294, 532 and 770 ct.

Total production for the year ending December 31, 1951, was 475,759 ct., of which 34 per cent were gem quality and 66 per cent were industrials. Production in 1950 was 655,474 ct. Total production to December 31, 1951, has been approximately 11,285,000 ct.

Gold Coast.—The production of diamonds in the Gold Coast began in 1920 and has reached, to date, a total of about 20,000,000 ct. The Birim district, in the valley of the Birim River, 60-80 miles north-west of Accra, is operated principally by four companies, the Consolidated African Selection Trust, Ltd., Akim Concessions Ltd., Cayco (London), Ltd., and Holland Syndicate. The deposits of the Bonsa diamond field are too erratic for profitable exploitation by large scale mechanical methods, and are, therefore, worked by natives. All of the known occurrences of diamonds in this region are alluvial, the richest areas occurring in or near the present stream beds. The general diamond content varies between 1.6 and 1.9 ct. per cu. yd. Production averages about 85 per cent industrial. The

diamonds are small in size, the largest ever recovered weighing only 4½ ct. Total production for 1951 was approximately 1,600,000 ct., an increase of about 650,000 over 1950.

Brazil.—No reliable diamond production figures are available for Brazil. Mining operations are largely in the hands of the individual miner or "garimpiero" and the market is believed to be so conducted that the majority of transactions in diamonds are unrecorded. It is stated that Soviet agents are buying large quantities of industrial diamonds in Rio de Janeiro and that the stones are being smuggled out in diplomatic pouches to Europe. Recent export figures suggest some such disposition of the diamonds mined. The great decrease in the reported figures indicates an increasing diversion of the mined stones into illicit channels. It may be noted that the exports officially reported for 1950 amounted to 3,363 ct., but imports into the United States during the same period was reported at 43,043 ct.

There have been no further reports on the new diamond district said to have been discovered in the Gilbues district, State of Piahy. The report of rich diamond deposits in the Carod River area, State of Pará has not been confirmed.

British Guiana.—The diamond fields of British Guiana are a continuation of the Venezuelan fields. Like them they are alluvial deposits derived from the conglomerates of the Roraima series. The diamonds are found in old or recent stream channels that originate in the high scarp of the Pakaraima Mountains to the south. The principal producing area is along the Mazaruni River, particularly in such of its tributaries as the Eping, Kurupung and Issineru Rivers. Other areas are the Dukwarrie River and Chinese Landing on the upper Cuyuni River, the Potaro River, a tributary of the Essequibo River, and the Rupununi District along the upper headwaters of the Essequibo.

All the production is by individual miners working singly or in small gangs. Maximum production was reached in 1923 when 214,474 ct. were reported. Since that time there has been a steady decline. Under the "porkknocker" system of working, only about 50 per cent of the diamonds are recovered, but many of the deposits are too small to allow efficient mechanical operations. Production was 37,462 ct. in 1950 and 43,260 ct. in 1951. Prices on the Georgetown market are reported to have been \$B.G.35 per carat. A small cutting industry depends upon local stones. Formal mining operations are being introduced into some of the areas. The Kurupung Placers, Ltd., a company jointly owned by American and British interests, has been prospecting an area on the Kurupung River, as well as their Sanganag concession of five sq. miles. The sum of \$133,000 was advanced to this company by the E.C.A. and it is expected that diamond shipments to the U.S. stockpile will begin not later than January, 1953. Presumably repayment of this loan is to be made in industrial stones.

No report of progress has been received from the British Guiana Diamond Corporation, who hold a dredging concession and exclusive permission to exploit an area covering a part of the Mazaruni River and the whole of

its tributary, the Meanu River. The Echilebar Development Co., organized in 1950, plans dredging the Echilebar River, a tributary of the Ireng River. Horizons, Ltd., a Canadian company, also plans mechanized operations in British Guiana.

Venezuela.—The diamondiferous area of Venezuela is situated in the State of Bolivar, particularly in the area known as the Gran Sabana and the contiguous region along the Caroni River. This little known region, remote from important centres and separated from the rest of Venezuela by natural barriers, is sparsely populated, in spite of the good climate, abundant pasturage and good soil. The Roraima series, a series of conglomerates, sandstones and shales, covers the large part of this region. Where these beds have been removed, diamonds have been found in the alluvial deposits of the rivers.

The most important producing district is the Parai-Tepui and Icabara area along the Sukurun River near the Brazilian border. This area was worked freely by miners until 1945, when a large area was concessioned to private interests. The Compañía Venezolana del Diamante, S.A., of which the governmental Corporación Venezolana is the principal stockholder, continues to develop its concession in this area and it is proposed to concede additional area to the company to total 800,000 hectares. It is expected that mechanization of its workings will appreciably increase production. The installation of seven new mechanical plants is projected. Tests have shown a production increase of over 60 per cent is possible. Primitive recovery methods with batea and sluice-boxes recovered diamonds over three per ct. only. Mechanization can increase recovery of stones as small as twelve per ct. to yield an increased production of industrially valuable stones. An extensive area in the Icabara area was excluded from the Government reserved zone and transferred to the free workings.

On November 1, the Government released a new area along the Uriman River from the national reserves to the free zone. This district was the scene of considerable illicit activity last year, when reports of rich discoveries attracted many miners. It was reported that about 15,000 ct. were recovered during the six weeks period of activity before the diamond washers were expelled. Recovery, it was reported, consisted of about sixty per cent gem stones, forty per cent industrial grade product.

Production figures for 1950 were 60,389 ct. and for 1951 63,226 ct.

India.—India now yields very few stones. Mining is largely carried on by primitive methods. The Panna Diamond Mining Syndicate Ltd., however, has embarked upon a programme of mechanization of their leases at Majgawan, Shahidan and Burgady in the Panna District, Vindhya Pradesh. The Majgawan deposits, although long known, have only recently been recognized as in kimberlite, probably as a pipe. A small sample of this ground yielded diamonds at a rate of 15 ct. per 100 loads, which the company considers as commercially exploitable. A 250 ton mill has been completed. The Shahidan area contains diamondiferous conglomerates, while the Burgady groups embrace river gravels for 40 miles along both banks of the Baghen River. For the time being development work will be restricted to the Majgawan pipe and the Shahidan conglomerates. Production in 1950 amounted to 2,769 ct.

Other countries where diamonds are known to occur in small quantities include the United States, Borneo, Australia, Southern Rhodesia and Surinam. During 1951 the Somabula field of Southern Rhodesia produced 32 stones weighing 40 ct., valued at £200. 1950 production in Aus-

tralia was 10 ct. valued at £A.30. In Surinam occasional small diamonds are found in sluices and pans on gold concessions along the Government railroad from kilometre 85 on south. The Mining Bureau of the Public Works Department is now surveying these districts to try to locate the source of the diamonds.

TECHNOLOGY

Investigations on the recovery of diamonds by flotation methods have yielded practical results. These processes are of two types, froth flotation and skin flotation. It has been found that skin flotation methods can be applied particularly well to the grease table concentrates of pipe mines, especially in the very small sizes where hand sorting becomes very arduous. The heavy medium separation and electrostatic separation techniques, described in the 1950 report, are being more and more widely used in various installations, especially in South Africa and S.W. Africa.

INDUSTRIAL DIAMONDS

As in 1950, developments in the field of industrial diamonds centred chiefly about greatly increased use by manufacturers geared to defence requirements, and a resultant short supply. Because of these factors prices of industrial diamonds of all grades continue to rise.

Total world production amounted to approximately 14,000,000 ct., an increase of about 1,500,000 ct. over 1950. The Belgian Congo continues to be the principal producer. The production is primarily crushing board. There was also a large increase in total production from the Gold Coast, from about 950,000 ct. (total) in 1950 to 1,600,000 ct. in 1951. Since 85 per cent of the Gold Coast production is industrial grade, this made available an additional 500,000 ct. in 1951. The Premier Mine in South Africa came into full production in 1951 and helped the industrial diamond picture to a considerable degree. 1951 production from the Premier Mine amounted to 1,134,000 ct., of which 80 per cent was high grade industrial stones. E.C.A. loans to increase diamond production in areas such as French West Africa have not yet had an important effect.

Industrial diamond prices are greatly influenced by the rising market and by activities behind the Iron Curtain. Due to a shortage of goods, prices quoted on the United States open market rose to about 110 per cent over basic by the end of the year, and to over 185 per cent in Europe. It is reported that Iron Curtain operators paid up to 330 per cent over distributor's prices. The greatest increase in price has been in the cheaper grades, for crushing board is the standard upon which the prices of inferior qualities are fixed.

No new uses for industrial diamonds were announced during the year, but there has been continual improvement in design of all types of tools. A. E. Long, of the U.S. Bureau of Mines, has oriented diamonds used in drill bits to take advantage of the hardest directions, and in his first tests he obtained 10 times the life from diamonds correctly oriented. Other tests showed less benefit, but a gain of two times in the life of a drill bit using this technique seems to be a conservative estimate. Likewise, C. B. Slawson, of the University of Michigan, has demonstrated that the wear on diamonds used for truing grinding wheels can be reduced by 50 per cent by correctly orienting diamonds in the hard direction. This idea was first proposed by P. Grodzinski as early as 1944.

Total imports of all classifications of industrial diamonds into the United States in 1951 were a record at 12,158,620 ct. valued at \$46,739,991. The corresponding figures for 1950 were 10,967,005 ct. valued at \$35,445,506. The average price per carat in 1951 was \$3.80 compared with \$3.33 in 1950.

Ion-Exchange Resins for Metal Recovery

By A. G. THOMSON

An example of the valuable work done by one of the various groups at the Chemical Research Laboratory of the D.S.I.R. at Teddington, was contained in an article by the same author which appeared in our issue of October 17. The investigations of the groups cover a wide field, and in part of the following article the author describes a method of gold recovery developed at the laboratory, which utilizes ion-exchange resins and is designed to eliminate the need for zinc precipitation.

Ion-exchange resins provide an economical and efficient method for the elimination of dilute wastes which are difficult to handle by conventional precipitation and settling and filtration techniques. They enable useful materials present in very small quantities to be recovered from water and other solutions, purification from non-ionic substances being simultaneously carried out. The absorbed substances may then be obtained in a more concentrated solution by treating the resin with strong acid or bases. Copper, zinc and silver are all being recovered from dilute solutions by means of ion-exchange techniques, which are being successfully applied to an increasing variety of difficult problems encountered in extraction metallurgy.

Of particular interest to the mining industry is a new process for the recovery of gold from cyanide solutions, which is designed to eliminate the need for zinc precipitation. This method was developed at the D.S.I.R. Chemical Research Laboratory by F. H. Burstall, R. A. Wells, Phyllis J. Forrest and N. F. Kember, and has been patented.

The solution is passed through an ion-exchange resin, which removes the gold along with any other metallic impurities which may be present, such as copper, nickel, zinc, iron, cobalt, silver, etc. At present the investigators are using Amberlite IRA400, an American resin which is commercially available in large quantities. An equivalent of this material Deacidite FF is made in Britain by Permutit Ltd., and technically there is no reason why other resins should not be obtainable, provided that the demand was sufficient to justify production.

REGENERATION OF THE RESIN BY ORGANIC SOLVENTS

The most novel feature of the process is the regeneration of the resin by means of organic solvents containing acid in place of the inorganic materials hitherto employed. Complete recovery of the gold could not be effected by any of the usual regenerators, but by means of this entirely new line of approach all difficulties have been successfully overcome. The next problem was to find a means of removing any other metals present in the resin while leaving the gold behind. This has been accomplished by the use of various simple aqueous eluting agents, such as dilute hydrochloric acid for the removal of nickel and zinc and cyanide solutions for taking out copper, silver, etc. The first step, therefore after absorption of complex cyanides on the resin is to elute off the various contaminating metals by means of suitable agents, the cycle being repeated until the quantity of gold remaining in the resin can be recovered economically with the organic reagent, leaving the resin ready to be used again.

Although the basic materials for the production of ion-exchange resins are not cheap, the resin has a far longer life than that of the zinc in the precipitation process, so that it is only the initial outlay which is high. The various eluting agents are all inexpensive materials which are readily available. Thus the cost of the process might be expected to compare favourably with that of zinc precipitation, particularly in view of the bonus provided by the

recovery of other metals present in the cyanide solution.

Work at the Chemical Research Laboratory has necessarily been confined to experiments on a laboratory scale. The results are regarded as extremely promising, but it is evident that further development on a pilot plant scale is required before its commercial possibilities can be assessed. In view of the potential value of the process, it is to be hoped that some gold mining company will be prepared to try it out on a small scale.

DEVELOPMENT OF ION-EXCHANGE RESINS

The Chemical Research Laboratory has played a leading part in the development of ion-exchange resins. The phenomenon of cation-exchange between a solution and a solid exchanger has been known for more than a century, and it is nearly fifty years since this principle was first applied to water treatment. In a process developed by Gans in 1905, calcium and magnesium were removed from hard water by exchange with sodium ions, which were supplied by synthetic aluminosilicates known as permutits. The usefulness of inorganic exchanges is restricted by their poor stability to acids, however, and for this reason no further developments of major significance took place for thirty years. In 1935, this limitation was overcome by two workers at the Chemical Research Laboratory—B. A. Adams and E. L. Holmes—who discovered that synthetic resins possessed ion-exchange properties. This discovery led to the development of improved materials and processes. Some 100 different ion-exchange resins are referred to in the patent literature and there are probably about twenty different types in commercial production. Another important step forward was the recent development of a method for preparing strongly basic resins, which was discovered independently in the United States and at the Chemical Research Laboratory. About 90 per cent of the total output of ion-exchange resins is used in some form of water treatment, but other fields of application are becoming increasingly important.

PROGRESS TOWARDS INDUSTRIAL APPLICATION

Hitherto all commercial applications have been confined to batch operation, but efforts are being made to devise a system for continuously operating equipment, and this is a direction in which significant developments are taking place, although the stage of industrial application has not yet been reached. In both Britain and the United States attempts are also being made to produce more highly selective resins tailor-made to the requirements of specific applications.

Ion-chromatography has become a very valuable tool for research and is widely used in laboratories for the separation of ionic materials. Among the most spectacular applications is the complete separation of the rare earths and their preparation on the gram scale by a group of workers for the United States Atomic Energy Commission.

So far as fundamental research on ion-exchange resins is concerned, Britain is fully abreast of any other country, but on the production side this country still lags behind the United States, both quantitatively and in the variety of resins produced.

Correspondence

TRAINING FOR MANAGEMENT

To the Editor, *The Mining Journal*.

Sir,—Thank you for drawing my attention particularly to Mr. J. B. Richardson's paper on the "Status, Training and Vocation of Graduates in Metal Mining" which was discussed at the recent meeting in London of the Institution of Mining and Metallurgy, and for the interesting comments on this paper in the leading article of the issue of *The Mining Journal* of October 24.

I agree with you entirely in thinking that management training, as distinct from specialized technical training, should be the responsibility of the industry rather than of the universities and technical colleges, and in this connection I might perhaps remind you that in my "Plan for Coal" published in January, 1945, for the reconstruction and reorganization of the British coal mining industry on the basis of private enterprise, I included on page 58 the following paragraph:

"I would just like to mention one further direction in which I believe it to be important that further facilities for education in the industry should be available. The facilities for technical training and education in mining subjects at universities, technical colleges and the like have been improving continuously throughout the years, and though no doubt extensions and improvements will take place following the putting into full operation of the new training scheme for the industry, I feel that there will still be no opportunity for teaching the general principles of management—particularly on all the human aspects and problems the wise and well instructed handling of which form such a vital element in the managerial responsibilities in an industry like this. I feel quite certain that such an opportunity should be provided by the industry itself, and that there should be established and permanently maintained a sort of residential staff college and that a period of, say, six months' residence at the college should be regarded in the future as an essential qualification for appointment as a colliery manager. I have already given my impressions of the colliery manager, and to suggest the provision of an opportunity for a period of broader education particularly in the field of industrial relations than can possibly be included in the technical education which leads to a First Class Certificate, is in no way to detract from the good qualities he already brings to his job.

"Such a college would also be of great value in giving special training in these important subjects to under-managers and other subordinate officials."

I know from my personal experience that the Administrative Staff College at Henley is doing a really first-class job and is worthy of the fullest possible support. It is quite possible that due to the great development which is now taking place in the mining industries of the Rhodesias, there would be room out here for a Staff College run on similar lines, though doubtless on a smaller scale. This is certainly a matter which is well worth pursuing and one which I hope I shall have an opportunity of following up personally with my mining friends out here.

41, Stanley Avenue,
Salisbury, Southern Rhodesia.

ROBERT FOOT.
November 3, 1952.

To the Editor, *The Mining Journal*.

Sir,—I agree to a considerable extent with the point of view expressed in the leading note in your issue of October 24. I think, however, that training for management is primarily the responsibility of the mining industry and not of the universities and technical colleges. The mines manager who has learnt his job from practical work in the various departments of a large, modern mine will be of far more value than the product of a course of management training. It is, however, impossible for small mining companies to provide the necessary facilities for management training so that I think there is a need for training

centres, particularly for senior men. Travelling teams of lecturers to visit the smaller mines would also be of value.

164, St. Stephen's House,
Westminster, S.W.1.

E. L. SPEARS.
October 30, 1952.

To the Editor, *The Mining Journal*.

Sir,—The problem, as stated in *The Mining Journal's* issue of October 24, is how and when to instruct the trained technologist in methods of business organization and management. The object in view is to ensure that the mining engineer, already possessing competency, becomes also qualified for the efficient discharge of managerial duties and responsibilities.

The interesting paper presented by Mr. J. B. Richardson before the Institute of Mining and Metallurgy mentions, more than once, the subject of coal mining. For reasons which will become apparent, the following comments relate only to metalliferous mining.

The British coal mining industry, being localized in this country, has problems very similar to those found in other kinds of British industry, especially those relating to human relationships. Metalliferous mining, on the other hand, is carried on almost entirely in foreign lands, and labour is for the most part locally recruited and drawn from alien races.

Many enterprises are controlled from London, by the company's Directorate. Where the manager of a coal mine has the advantage of close association with his board, and can obtain decisions on urgent problems without delay, the manager of a mining enterprise overseas, probably some thousands of miles from the seat of administration, lacks this advantage. Consequently, he may have to take the responsibility of making quick, perhaps vital, decisions, on questions which are outside his professional experience and training.

In addition to general supervision and co-ordination of the activities of the various technologists on his staff and of his secretarial and accounts organizations, he may be called on to deal with foreign governments and native potentates, to conduct difficult negotiations with such authorities on behalf of his company, to represent the views of his absent Board at conferences on the highest level with Government Departments, to give evidence before Arbitration Courts, to watch the trend of Government policy and legislation with reference to its possible effect on his company's operations and to urge reconsideration if that effect is likely to prove harmful, to urge to deal with highly technical questions of foreign exchange and of taxation, to study markets and master the technique of salesmanship, etc. Now most of these matters, other than the primary task of controlling mining operations, would, if the mine were located in this country, be handled by the Managing Director or the Board, who would be in easy reach and in close touch with the manager. This would also apply in the case of mines situated, as many are in South Africa, close to the seat of direction.

It seems to be generally agreed in this discussion that it is desirable that a mining engineer should also know the commercial side of the industry, and should therefore be instructed in methods of business organization and management and thus qualified to be a mine manager. How and when such instruction should be given is, however, a matter on which opinions clearly differ.

Is there not another possible solution, albeit, one which may quite probably not commend itself to the mining profession? It is based on the premise that to be a good mining engineer is a full-time job for any man, and that the mine manager should be just what he was trained to be and what his title clearly indicates—the manager of a mine, in all its technical aspects. Is there any valid reason why mining graduates, after they have acquired the necessary practical experience in the exercise of their profession and are promoted to management, should then have, in practice, to delegate to others most of the technical supervision of the underground work, of stopping, development, prospecting, and sampling, also of milling, etc., and to divert most of their time and thoughts to matters for which they have not been specifically trained?

Mr. Richardson, in his paper for the Institute, writes: "The British coal industry is handicapped by the shortage of capable men at higher managerial levels, both technical and administra-

tive. Does not this support the plea that a certain amount of time in the curricula should be devoted to the science of management? If the senior administrative posts can be held by a technical man, an expensive item in the salary list can be saved." Possibly, but if that expense is saved by overloading the technical man with administrative duties which, it is submitted, can be equally well performed by a non-technical man with managerial training and experience, may it not, in the long run, result in losses, through the manager's inability to perform two separate and distinct functions at the same time, far in excess of the saving on one salary?

Instead, then, of endeavouring to cram more subjects into the curricula of mine students, or alternatively of arranging that mining graduates, after gaining sufficient practical experience in the field, should attend some form of post-graduate instruction in management, it seems to be worth considering whether, without lowering the status or reducing the authority—or the salary—of the mine manager, the greater part of the administrative work might not be delegated to another man, whose position might be roughly described as that of "Business Manager."

Mines differ so widely in size and in the local conditions in which they operate that an organization suitable in one case might be unsuitable in another. In the smaller class of mine, the system, which incidentally has worked most successfully in the past in many mines, under which both the technical and business and managerial functions have been entrusted to a mining engineer, might well continue. Again, in very large mines, the organization may well provide already for the separation of the technical engineering side of the work from the business and administrative side. But in many medium-size mines, where the local conditions are such that all business and administrative responsibilities devolve on the mine manager, a professional mining engineer, it is submitted that the latter duties might advantageously be delegated to a non-technical man, who has been trained in management, thus leaving the mine manager free to apply his specialized skill and experience to the many technical problems of mining and—by no means the least important—the study of human relationships.

The trend to-day is more and more towards specialization; the separation of technical and managerial functions, adumbrated above, follows this trend.

"A COMPANY DIRECTOR."

London, E.C.2.

October 28, 1952.

[The signature to this third letter conceals the identity of a man who has over the past twenty-five years been a director of several well known and successful overseas mining companies.—Ed. M.J.]

REVIEWS

Handbook on Prospecting in South Australia.—Issued by the Department of Mines, South Australia. Pp. 151. Price in Australia 7s. 6d.

The objective of the handbook under notice, which has been compiled by officers of the South Australian Department of Mines, is to present a summary of the knowledge of the State's mineral resources as well as an outline of methods of exploration and development. In contrast with other States of the Commonwealth where metalliferous mines are dominant, the mining industry of South Australia is chiefly concerned with industrial minerals. The sole exception is iron ore, and it is the policy of the South Australian Department of Mines and Geological Survey to aid all those interested in developing the mineral wealth of the State.

Introductory pages deal with mineral production in South Australia, and describe the role of the prospector in the mining industry. Some 54 pages of particular interest make mention of the mineral resources of the State, and excellent maps are published showing in sequence the locations of the deposits mentioned. Subsequent chapters deal with the problem of reviving copper production in the area, and with the

geological features of gold occurrences there. Of marked interest in light of modern developments are the brief descriptions of those uranium minerals likely to be found in South Australia.

Insofar as methods of exploitation and marketing are concerned, a chapter on prospecting covers many aspects of these departments of mining endeavour. The recognition of mineral deposits is given prominent place, and details of prospecting methods from the most crude and simple to borehole drilling are included. Helpful notes on Departmental aid for prospecting and on the mining legislation in force conclude a useful and informative handbook.

Materials Survey for Lead, Cobalt, Antimony, Zinc, Nickel and Asbestos, 1950.—In six volumes. Compiled for the Materials Office National Security Resources Board by the U.S. Bureau of Mines. Available from the U.S. Government Printing Office, Washington 25 D.C., at prices from \$1.75 to \$3.50.

The six volumes under notice have been prepared by the U.S. Bureau of Mines with the co-operation of the Geological Survey. Bound in loose leaf form to allow for ready revision, the primary purpose of this series of basic surveys on various strategic and critical mineral commodities is to provide factual data for the use of those officials responsible for national defence. A subsequent edition is now available for public distribution. The volumes come at an appropriate time, hard on the heels of the valuable Paley Report, which has received considerable mention in *The Mining Journal* during recent weeks.

Each survey deals completely with all aspects of the mineral concerned. Chapters present a detailed picture which embraces such factors as production, stocks, reserves and consumption, as well as marketing and commercial forms and uses. The surveys deal with other countries of the world besides the United States, and the whole comprises a series of considerable value.

Rocks for Chemists.—By S. J. Shand. Published by Thomas Murby & Co. Pp. 141 and with 32 photographic illustrations. Price 21s.

In the work under review, the author brings to the attention of chemists some of the problems involved in the genesis and history of lava and crystalline rocks. Pointing out that such activities as the evolution of a granite mountain, the working of volcanoes, or the overall weathering of rocks are problems of pure chemistry, albeit on a magnificent scale, he emphasizes that petrology can be considered as the common ground of geology and chemistry.

The author's approach to his subject is effective, in that his work flows in a manner which allows his words to be easily and quickly absorbed. In early chapters the rocks of the field are discussed, and these chapters are followed by informative portions on active and underground lava and the classification of eruptive rocks.

Subsequent portions of the book deal with plagioclase, dioritic, granitic, syenitic, feldspathoidal, sedimentary and metamorphic rocks, and the whole is a well presented work that fulfills its purpose of acquainting chemists with petrological problems.

Members' Handbook and Buyers' Guide Index.—Fifth Edition. Published by the Gauge & Tool Makers' Association, and **Duties and Taxes on Import of Tools and Gauges.**—Second Edition. Published by the Gauge & Tool Makers' Association. Price 10s. Post Free.

Copies of the *Members Handbook and Buyers Guide* are being circulated, and the publication is available on application to the Association offices at Stanbrook House, Old Bond Street, London, W.1. The pages of this work include names and addresses of all members of the Association in Britain and Overseas.

The second edition of the comprehensive brochure *Duties and Taxes on Import of Tools and Gauges* gives details of the customs duties and taxes levied by the principal world markets upon the importation of tools and gauges. This edition is fully up-to-date, and includes the decisions taken at the Torquay Conference on tariffs.

MACHINERY AND EQUIPMENT

A Light Rock Drill Support

Providing for fast and accurate drilling with an absence of "whip," the Broomwade Drilleg is designed for service in conjunction with Broomwade rock drills and has feeds of 39 in. and 51 in. The equipment was exhibited on the company's stand at the Public Works and Municipal Services Exhibition held last week at Olympia.

The changes of drill steel necessary when alloy steel bits are used during drilling, in turn demand the employment of a heavy drill. In order that the bottom of a hole will be of



The Broomwade Drilleg

circumference enough to receive the cartridge, the outer lip of the hole must consequently be of considerably greater diameter, and for these reasons a heavy drill is required for use with alloy steel bits, and a correspondingly heavy support is needed in keeping with the rest of the equipment.

The tungsten carbide bit, on the other hand, will drill some 200 ft. to 300 ft. as against an approximate 6 in. of steel bit, and because of this fact one steel can be utilized throughout a drilling operation. The resultant hole is of small diameter from lip to end and thus may be drilled by a light rock drill and a light support.

The manufacturers announce that the Broomwade Drilleg was designed for this duty, as it not only supports but automatically feeds the drill and is itself light and portable. It is further presented as possessing many improved features which have been tested with the unit under actual working conditions. Two sizes of the Drilleg are made: Type BD39 with a closed length of 61 in. (1,550 mm.), an extended length of 100 in. (2,540 mm.), a feed of 39 in. (990 mm.), and a weight of 42 lb. (19 kg.), and the Type BD51 model with a closed length of 73 in. (1,854 mm.), an extended length of 124 in. (3,150 mm.), a feed of 51 in. (1,295 mm.), and weighing 47 lb. (21 kg.).

The unit consists of a hollow cylinder with a piston rod attached to the rock drill. The cylinder is constructed of aluminium alloy for lightness and the steel piston rod is tubular. As the drill penetrates, air pressure gradually extends the piston rod and feeds the drill into the rock. The absence of "whip" during the operation of the machine has been brought about by a care in design so that the natural period of vibration of the piston rod lies well outside the frequency of vibration induced by the operation of the drill. Air pressure for the feed is controlled by a patented pressure regulator so that any pressure required is automatically maintained throughout the feed. The pressure may be instantly released by a push button release valve.

Steel Chocks Replace Timber in Pits

A new type of steel chock is to be widely used in pits of the Durham Division of the National Coal Board, according to a report in *Target*, a monthly bulletin on productivity published by the Central Office of Information.

The new steel chock is said to be able to support a greater load than its wooden predecessors as well as being cheaper and safer, for steel is not inflammable. The saving in timber by use of the new method is worthy of mention, and finally,

the steel chocks are reported as being easier and quicker to instal.

In the old operational method, wooden chocks were built up behind the coal face and time was expended when they had to be removed later. In addition, most of the timber was damaged by roof pressure and was unsuitable for further use.

The only wood utilized by the steel chock is a small pad which acts as a cushion between the roof and the steel pad of the chock. This is hinged and held in position by a steel wedge, so that when the wedge is knocked out the pad falls away. This in turn causes the roof to fracture off in the waste behind the coal face.

A Series of Tractors

Two of the tractors shown by David Brown Tractors Ltd. at the Public Works Exhibition, Olympia, were of the Trackmaster series, and the units were displayed with associated equipment. There was also displayed a Taskmaster industrial wheeled tractor.

The most powerful of the David Brown crawlers, the Trackmaster 50, was introduced in 1951 and is now going into production. Presented as a versatile unit, the Trackmaster 50 is powered by the David Brown six-cylinder direct injection o.h.v. Diesel engine, which develops 50 b.h.p. at the maximum governed speed of 1,800 r.p.m., while the six-speed gearbox with high and low reverse enables the weight and power of the unit to be used to the best advantage. The blade is 8 ft. 7 in. in width and 2 ft. 3½ in. deep, and can be angled 25 deg., and is hydraulically operated with the power provided by a front mounted pump driven from the engine crankshaft. The control valve incorporates a float position.

The unit is compact at 12 ft. 5 in. x 8 ft. 7 in. with the blade straight and is especially suited for medium work where space is limited. The weight of the unit with angled dozer is approximately 5 tons, and thus it can be carried on standard vehicles.

The Trackmaster 30 unit, also on display at the Exhibition, has a David Brown 4 cylinder direct injection o.h.v. Diesel engine, which develops 34 b.h.p. at 1,800 r.p.m. Complete with dozer the unit weighs approximately 4½ tons and its overall dimensions are 11 ft. 7½ in. x 6 ft. 8½ in. It is particularly suited for work on housing sites and for such duties as stock pile control. The blade, 6 ft. 7½ in. x 2 ft. 5½ in. in dimension,



The Trackmaster 50 with Blaw Knox hydraulic angled dozer

is hydraulically controlled by a four-position control valve, and the system is powered by a crankshaft driven pump.

Another machine whose potentialities in the sphere of economical short haul work are rapidly being realized is the Taskmaster industrial wheeled tractor. The model shown at the exhibition was fitted with a winch and a 4-cylinder David Brown direct injection Diesel engine. This engine develops 34 h.p. at 1,800 r.p.m., and alternative petrol and petrol/paraffin engines are available. The Taskmaster is used for aircraft towing, dockside work and general haulage.

METALS, MINERALS AND ALLOYS

Since the beginning of this year *The Mining Journal* has been publishing a monthly table of U.K. primary metal statistics relating to copper, lead, zinc and tin, based on the published figures of the British Bureau of Non-Ferrous Metal Statistics. Beginning this month we have extended this table to include cumulative totals for the year to date, compared with corresponding figures for the preceding year. The salient features arising from this extended table, with which readers will already be familiar, include this year's sharp increases in lead and zinc stocks, accounted for in the former case by a substantial drop in consumption and in the latter case by a doubling of imports; while the outstanding feature in the tin figures is the big increase in exports, a considerable portion of which doubtless relates to the cheap sterling deals on which the Bank of England recently clamped down.

As from the beginning of next year all individual manufacturers and merchants will be permitted to obtain import licences for, and to distribute, all ferro-alloys. For some years this trade has been handled by B.I.S.C. Ltd., on behalf of the Ministry.

COPPER.—After three weeks' cessation of work, the native workers on the Northern Rhodesian copper mines returned to work last Monday pending further conciliation proceedings, which were resumed two days later. It is to be noted that the resumption of conciliation talks has been at the request of the union, which has suggested this step in preference to the more binding procedure of arbitration. Although production, valued at £4-£5,000,000 has been lost, some improvement in the rate of output may be expected later in the year. Fuel troubles, which loom large in the chairman's statement to shareholders in Roan Antelope and Mufulira Copper should be eased at least temporarily because coal has been stocked during the strike. Again smelter repairs which would have had to be done some time, have been carried out without loss of production time.

The Chilean Economy Minister has said that his Government has no intention of nationalizing the copper industry because it would involve the establishment of a new and unnecessary agency. While the Chilean Government controls copper exports and the exchange rate as closely as it does now, "unnecessary" seems to be the operative word.

Another example has come in this week of the manner in which the demand for copper is expanding production. A company is to be formed in the French West African Colony of Mauritania to mine ore in the Akjoujt area. One half the capital will be held by the French Treasury and one half by private enterprise. Initial output will be about 20,000 tons of copper a year.

Because the permanent return to work of the African workers on the copperbelt is not yet assured, the Ministry of Materials will not lift its restrictions on forward purchases of copper for December delivery. There has been no great forward buying rush.

In the U.S., the earlier caution in placing December orders, referred to here last week, has now given place to a firm market with sellers of foreign metal demanding the full 36½c.

LEAD.—Writing in this column four weeks ago we expressed the view that having regard to the prospects for American industrial activity it was difficult to regard the London lead price, which was then in the middle 80's, as other than temporarily depressed. Developments in the last fortnight have gone some way to confirm this view as although the London market remains slack an upward pressure in prices has been noticeable in the U.S. since Mr. Larson's comments of a fortnight ago and consumer demand has been exhibiting considerable strength at prices up to 14½c. with some indication of the price going higher. This tendency has undoubtedly helped to sustain the London price and the prospects appear better for Australian producers being able to divert U.K. shipments to the American market while they are disposing in London of their recently re-purchased Government stocks.

The lag in battery shipments in the U.S. which occurred in the early months of this year had by the end of September very largely been made good, shipments for the first nine months of this year amounting to 15,079,000 units compared with 15,205,000 in the corresponding period of 1951.

Since the resale of U.K. Government stocks to the producers a number of estimates have been made of the quantity likely to have been reclaimed in the Government stockpile. In these there has been a fair degree of unanimity and it seems probable that of the stocks of 95,000 tons held by the Government at the end of September, around 40,000 tons are being sold of which 12,500 tons have either already been disposed of through the London Exchange or are being held for future sales through this source as the market may require, leaving about 27,500 tons for resale to producers within the next 14 months. If these figures are approximately right this would leave the Government with a stockpile of about 55,000 tons.

TIN.—A year has elapsed between the visit of the U.S. tin mission to Malaya, and the publication of its report. It admits that prospecting for new areas has been halted by bandit activity but it says it found no evidence of curtailment of production at the mines or the smelters. The report apparently discounts the strain of guarding properties and repairing damaged pipe-lines and the casualties actually caused by the bandits. Not surprisingly the mission met opposition to its suggestion that the Singapore market should be replaced by negotiated sales on the basis of long term contracts at a fixed price, subject to revision in accordance with a price index, or the delivery of tin either as a metal through a toll arrangement or as concentrates, or an extension of master contracts with large producers to cover all who wish to join. Comment on the report must wait upon the receipt of the full document in this country, although it must remain a matter for regret that it has taken so long to make public a report which once again dismisses the "gouging" charges.

The nationalized Bolivian tin companies have now been invited by the State Mining Corporation to send representatives to discuss the valuation of their properties. Even highway robbery its seems, has a certain etiquette.

The West German Government is expected shortly to authorise trading in tin futures on the London exchange.

U.K. PRIMARY METAL STATISTICS—SEPTEMBER
(long tons)

	Refined copper			Lead†			Slab zinc			Tin metal		
	Sept., 1952	Jan.-Sept., 1952	Jan.-Sept., 1951	Sept., 1952	Jan.-Sept., 1952	Jan.-Sept., 1951	Sept., 1952	Jan.-Sept., 1952	Jan.-Sept., 1951	Sept., 1952	Jan.-Sept., 1952	Jan.-Sept., 1951
U.K. stocks beginning period‡	91,864	87,251	72,960	116,480	77,167	61,687	124,402	39,659	36,256	4,530	8,004	4,504
Imports.....	14,427	170,932	169,459	10,532	113,614	109,719	16,865	176,766	84,401	114	2,687	6,997
Production.....	11,882	113,986	97,660	7,899	64,383	51,816	6,695	49,705	54,593	2,330*	22,034*	18,180*
Consumption.....	28,303	268,883	242,199	16,559	138,083	180,094	14,466	130,838	137,109	1,789	16,829	17,975
Exports and Re-exports.....	Nil	444	668	4,399	4,864	Nil	8	104	22	1,236	19,585	4,786
U.K. stocks end period‡:	94,886	94,886	108,436	109,323	109,323	43,902	133,699	133,699	35,528	4,006	4,006	5,268

(Source: British Bureau of Non-Ferrous Metal Statistics)

*Estimated by International Tin Study Group. †Includes imported virgin lead and English refined from domestic ore and secondary metal. ‡Including any Government stocks other than strategic reserves. †In addition U.K. stocks of blister copper at the end of September were 26,763 tons; of zinc concentrates were 47,340 tons; and of tin in ore were 3,052 tons.

We commented here last week on a forecast of lower Malayan output this year in a publication referred to as the Quarterly Bulletin of the F.M.S. Chamber of Mines. This reference should have been to the Quarterly Bulletin published by the Malayan Inspector of Mines. The discrepancy between this forecast and the Tin Study group figures nevertheless remains, and in this connection it is of interest that spokesmen for the industry in London do not anticipate a variation of more than 2-300 tons in this year's Malayan output compared with last.

ZINC.—The slab zinc industry in the U.S. is fast catching up with its arrears of orders, according to the figures issued by the American Zinc Institute. At 37,533 stons, unfilled orders at the end of October are at the lowest level since the end of 1949. The cutting down of these arrears in October can be represented as being roughly equivalent to the decline in stocks of slab zinc, but at 90,581 stons, these are still about four times what they were a year ago. A similar increase is shown in U.K. stocks in the table on the previous page.

The U.S. zinc prices remains steady at 12½c. although consumers are apparently only purchasing for immediate requirements.

QUICKSILVER.—The Spanish export price of quicksilver has jumped from \$165 to \$180 per flask f.o.b. and the c.i.f. U.K. price from £64 to £69 10s. The Italians have followed suit and are now quoting a U.K. c.i.f. price of £70. This reverses the trend observed since the beginning of the year and will probably help Indian exporters to sell the 10,000 flasks permitted by the Indian Government.

Iron and Steel

Notwithstanding the October steel production record, the end of the steel shortage is not even in sight. The Minister of Supply has given warning that supplies from home production would not be enough to meet all requirements and that we will have to continue the import of steel from America and elsewhere in 1953. From this it is inferred that hopes of the abolition of the rationing system are still premature although the position is undoubtedly easier and progressive improvement seems to be assured.

It is now tolerably certain that the target figure for the current year—16,000,000 tons of steel from home production—will be exceeded, and imports are now expected to amount to the equivalent of 2,000,000 ingot tons. Thus the total steel supplies for the year should be rather more than 18,000,000 ingot-tons which is about 1,000,000 tons above the rate in 1951. More is still required and the provision of new plant is being speeded up to keep pace with the urgent needs of the steel using industries. In particular, the building of new and bigger blast furnaces has stepped up pig iron output and offsets the loss of scrap supplies from Germany. Six new blast furnaces are already in operation and two more are expected to be ready by the end of the year. As a result the October pig iron output was also a record for the month, the annual rate of 10,616,000 tons comparing with 9,865,000 tons in October last year.

The London Metal Market

(From Our Metal Exchange Correspondent)

Tin has been a very quiet market during the week with small price movement, mostly downward. Consumers' demand here and on the Continent has been slow. It has been reported that the R.F.C. now has no English refined tin to dispose of to consumers, and consequently there is rather more interest being shown in the United States in spot and nearby Straits tin.

The Eastern price on Thursday morning was equivalent to £958 10s. per ton c.i.f. On Thursday afternoon the market was steady.

Lead has been a fluctuating market this week, but seems to be settling down in the £90's after the weakness which was apparent a few weeks ago, and following the Government announcement last week of the sale to the producers' agents of the bulk of its stock after the transfer of an unspecified quantity to the national stockpile. Selling by producers' agents has been less aggressive, and consumers seem to have been quietly covering their more immediate requirements, and there

has been a fair demand from the Continent. In America there has been a good demand, and the price there was advanced to 14.20c. per lb. on the 10th inst., and to 14.50c. on the 12th inst. On Thursday afternoon the market was steady.

Zinc has experienced very little change and quiet conditions are expected to continue at least until the re-opening of the London Metal Exchange in the New Year when it is anticipated that the price will show some decline from the present £110 per ton delivered. On the Continent the market has been quiet.

Copper remains a firm market at 36½c. per lb. for Chilean metal, and slightly less for Continental material. These conditions seem likely to continue at any rate until there is definite improvement in relations between the Rhodesian copper mining companies and the African mine-workers.

CLOSING PRICES AND WEEK'S TURNOVER

	November 6		November 13	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash	£962	£963	£951 10s.	£952 10s.
Three months	£942	£943	£936	£937
Settlement		£962		£952
Week's turnover		565 tons		435 tons
Lead				
Current month	£95	£95 10s.	£97 15s.	£98
Three months	£95	£95 10s.	£97 15s.	£98
Week's turnover		7,725 tons		6,825 tons

NOVEMBER 13 PRICES

COPPER

Electrolytic £285 0 0 d/d

LEAD AND TIN

(See our London Metal Exchange report for Thursday's prices)

ZINC

G.O.B. spelter, foreign, duty paid ... £110 0 0 d/d
G.O.B. spelter, domestic ... £110 0 0 d/d
Electrolytic and refined zinc ... £114 0 0 d/d
Special high grade ... £116 0 0 d/d

ANTIMONY

English (99%) delivered,
10 cwt. and over ... £225 per ton
Crude (70%) ... £210 per ton
Ore (60% basis) ... 20s. — 22s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) ... £454 per ton

OTHER METALS

Aluminium, £166 per ton.
Bismuth (5 cwt. lots) 17s. 6d. lb.
(min. 2 cwt. ex-warehouse).
Cadmium (Empire), 14s. 4d. lb.
Chromium, 6s. 3d./6s. 7d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.o.z.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96% - 98%)
2s. 2d./2s. 3d. per lb. d/d
Osmiridium, £40 oz. nom.
Osmium, £65/£70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £64 10s.
ex-warehouse
Selenium, 25s. nom. per lb.
Silver 72½d. f.o.z. spot and f.d.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth 65% 9s. 9d. lb. c.i.f.
60% 9s. 6d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £13 2s. per ton c.i.f.
" " (concentrates) £13 2s. per ton c.i.f.
" " Refractory £12 14s. per ton c.i.f.
Baluchistan Metallurgical ... £14 15s. 6d. per ton c.i.f.
Magnesite, ground calcined £26 - £27 d/d
Magnesite, Raw ... £10 - £11 d/d
Molybdenite (85% basis) 105s. 10d. per unit c.i.f.
Wolfram (65%) ... 410s. c.i.f. U.K. buying
" " " 432s. 6d. d/d U.K. selling
Scheelite ... 400s. c.i.f. U.K. buying
" " " 422s. 6d. d/d U.K. selling
Tungsten Metal Powder ... 30s. 8d. nom. per lb. (home)
(for steel manufacture)
Ferro-tungsten ... 27s. 6d. nom. per lb. (home)
Carbide, 4-cwt. lots ... £32 3s. 9d. d/d per ton
Ferro-manganese, home £49 8s. 8d. per ton
Manganese Ore U.K.
(48% - 50%) ... 6s. per unit
Brass Wire ... 2s. 8½d. per lb. basis
Brass Tubes, solid drawn ... 2s. 2½d. per lb. basis

COMPANY NEWS AND VIEWS

Consolidated Gold Fields Surprises the Market

Consolidated Gold Fields of South Africa in a preliminary statement have announced a dividend of 3s. per £1 share equivalent to 15 per cent in respect of the year ended June 30 last, the same as for the previous year.

The financial results of the wholly owned subsidiary, New Consolidated Gold Fields, for the year, subject to audit, are given in the table below.

Year to June 30	Working Profit	Tax	Net Profit	To Reserve	Divi- dend %	Carry Forward
	£	£	£	£	%	£
1952	1,996,710	884,000	1,112,710	670,000	15	319,714
1951	1,347,910	740,160	607,750	180,000	15	302,254

The feature of the preliminary statement was the large expansion in the net profit which, in spite of being called upon to absorb heavy tax liabilities, showed an expansion of nearly £505,000 over the preceding year. This result is as impressive as it is remarkable, for conditions prevailing in the gold mining industry, and indeed on the gold share markets during the company's financial year would not lead one to expect such excellent figures. However that may be, the factors contributing to this performance will be made clear when the full report and accounts are posted on November 18.

Meanwhile, the preliminary statement shows that the opportunity has been taken to substantially strengthen the group's already powerful position.

The annual meeting will be held in London on December 11. Mr. Robert Annan is chairman.

Anglo Transvaal Consolidated Investment Maintains Dividend

In the annual report and accounts of Anglo Transvaal Consolidated Investment for the year ended June 30 last the directors state that investments in subsidiary companies and other concerns valued at or under cost, but before deduction of the reserve, totalled £6,107,803. Of this figure, £5,392,160 represented the value of shares and interests quoted on the London and/or Johannesburg Stock Exchanges, the market value of which was £4,344,291. The previous reserve of £500,000 has been increased to £600,000.

Current assets, made up of sundry debtors, loans and cash, totalled £3,155,605, which was approximately £1,000,000 in excess of current liabilities. The general reserve remained unchanged at £3,500,000.

The contingency applicable to the balance of £350,000 of the consideration of £600,000 due to the company by the South African Coal, Oil and Gas Corporation (Sasol) was waived under an agreement with Sasol whereby the balance owing was reduced to £315,000; payment of which is guaranteed over a period of years.

On June 18, 1948, the directors were empowered to issue 50,000 participating preference shares to the company's employees and officers, but to date only 3,800 of these shares have been issued. In this connection, the report states that the directors would like those powers extended to enable them, if deemed expedient, to allot and issue the whole or any portion of the remainder of such shares for cash not below par to the trustees of the company's pension and/or provident funds.

The profit and loss account showed little change from the previous year, and the dividend was maintained at 50 per cent which required £381,250.

Year to June 30	Net Revenue	Expenses	Tax	Net Profit	Divi- dend*	Carry Forward
	£	£	£	£	%	£
1952	754,105	17,304	135,000	601,801	50	353,860
1951	673,326	14,434	107,000	551,892	50	388,865

*On ordinary and "A" ordinary shares.

Nil against £50,000 was transferred to general reserve but on the other hand the sum of £100,000 against nil was transferred to reserve for shares and interests in other concerns. The annual meeting will be held in Johannesburg on November 28. Mr. S. G. Menell is chairman.

Gold Fields Rhodesian Earns More But Passes Dividend.

The principal shareholdings of Gold Fields Rhodesian Development as at May 31 last were in mining companies operating on the Rand, in the Orange Free State, and in Southern Rhodesia, Australia and America.

Year to May 31	Gross Revenue	Expenses	Tax	Net Profit	Divi- dend	Carry Forward
	£	£	£	£	%	£
1952	119,970	47,625	23,655	48,690	Nil	4,572
1951	113,842	32,388	23,439	58,015	5	31,165

The profit and loss account showed that gross revenue expanded by some £6,000, due principally to the improvement in profits on investments realized which advanced from £42,148 to £54,194. The loss of £25,660 (nil) on mining operations of the Sebakwe group of mines was responsible for the appreciably heavier outgoings, a situation not materially affected by the reduction in expenditure on prospecting from £13,583 to £4,313. Thus, with taxation liabilities remaining virtually unchanged, net profit was nearly £10,000 less than in the preceding year. No dividend distribution was made but by appropriating the available surplus together with £31,165 brought in, and £145 from the tax provision written back, the allocation to depreciation reserve was raised to £80,000 compared with £20,000 previously. The carry forward at the financial year end was £4,572.

While Gold Fields Rhodesian is not one of the major finance houses, it is a well-managed and directed company in the Consolidated Gold Fields of South Africa group, and included in its investment portfolio are some first-class gold mining companies, such as West Dries, Vogels, Harmony, Ariston, Lake View and Star, and Yukon Consolidated.

The annual meeting will be held on December 3, Mr. Robert Annan is chairman.

Roan Antelope & Mufulira—Increased Production Forecast.

That both Roan Antelope and Mufulira copper mines experienced a record year in terms of pounds, shillings and pence was abundantly clear from the preliminary statements issued in August last and noted in our issue of August 29.

The full reports now published reveal that the year was also a record one for Roan Antelope from the point of view of both the tonnage of ore hoisted and blister of copper produced. Indeed, the actual tonnage hoisted was 4,368,000 and towards the end of the year the hoisting rate was running at about 5,000,000 tons per annum, a figure which enables the Company to represent itself as the largest underground copper mining operation in the British Empire. The tonnage of blister copper produced in the smelter showed an increase over the preceding year of 6,500 tons at 8,027 tons.

Blister copper production at Mufulira, on the other hand, fell by 10,312 tons to 76,369 tons despite an increase in the grade of ore milled. The major proportion of this fall was, however, attributable to the fuel shortage which caused a loss equivalent to some 30 days' output. Because Mufulira is a wet mine with a high pumping load it is in a different and less advantageous position than Roan Antelope and when the threat of flooding to a railway bridge over the Kafue River occurred last March it was necessary for the company to build up its coal stocks to a greater degree than other mines on the copperbelt.

Although the coal production has increased the rail transport facilities, Mr. Prain states, have not kept pace and the problem of moving the full tonnage of coal produced still remains. Nevertheless, he forecasts that production during the current year for Roan would rise to about 90,000 tons and should reach about 85,000 tons for Mufulira.

Costs of both companies continue to rise reflecting the upward trend in the cost of materials, supplies and wages. Against this trend the companies have had the benefit of a rise in the average price of copper from £175 to £206 which resulted in a profit increase of £24 per ton for Roan Antelope and £11 per ton for Mufulira.

The impact of the persistent rise in the prices for a very

wide range of materials also affected the estimates for completing the cost of Mufulira's new refinery. Originally, a figure of £3,000,000 was mentioned, but this has now been revised upwards to approximately £4,000,000 which funds the company still intends to find from its own profits.

Up to the end of June 1951 reserve funds for this purpose amounted to £2,000,000 and a further sum of £375,000 has been earmarked out of the past year's profits.

With regard to the question of domicile Mr. Prain said that a decision is expected in the near future.

Kamunting's Net Earnings Reduced

The fact that gross proceeds at £1,741,223 from tin ore sales of Kamunting Tin Dredging for the year ended March 31 last were not appreciably different from the previous year's figure of £1,781,386—despite the decline in output by 150 tons—was accounted for by the increase in the average price received per ton tin metal by £34. However, operating costs rose by approximately £60,000, so that the working profit of the year under review reflected a perceptible contraction in earnings compared with the preceding year. Taxation was only slightly reduced, £520,000 against £537,000, so that the net profit of £260,922 hardly compares with the previous year's net earnings of £337,740.

Year to Mar. 31	Dredged cu. yd.	Output	Price Received per ton tin metal	Tin Proceeds (Gross)	Mining Costs	Working Profit
	(000)	(tons)	£	£	£	£
1952	12,820	2,482	945	1,741,223	960,353	780,922
1951	13,805	2,632	911	1,781,386	899,459	874,740

The sum of £16,000 (£10,000) was written off its holdings of British Government securities. Only £4,543 (£34,522) was allocated to contingencies reserve, but the same amount, £100,000, was provided for the transfer of the Panganga dredges, leaving an available surplus of £140,379 against £169,218. The total dividend distribution was maintained at 40 per cent absorbing £140,438 (£142,528) and the carry forward at the financial year-end was £82,164 compared with £87,356 brought in.

The company has now received 75 per cent of the Malayan War Damage Commission award and the chairman, Mr. Jack Addinsell, stated that it has been indicated that at least 95 per cent of the award will be paid and the further payment, which it is hoped will be settled in the current year, will enable the company to write off the sum still left on restoration account and discharge the balance of the rehabilitation advance from the Malayan Government.

The annual meeting will be held in London on November 25.

Tekka Earns More but Pays Less

The working results of Tekka for the year ended March 31, 1952, were much the same as for the previous year.

Year to Dec. 31	Treated (000)	Per Cubic Yard Yield (lb.)	Cost s. d.	Output (Tons)	Per Ton Ore Cost	Per Ton Ore Price*
					£	£
1952	462	0.51	1 5	103	318	506
1951	461	0.53	1 3	110	254	439

*Less tribute.

Financially, too, results were very similar. And although the net profit was larger and the distribution smaller, the sum of £3,042 (£53) was written off capital expenditure and the opportunity was taken to strengthen general reserves by the allocation of £5,000 (nil) raising that account's total to £25,000.

Year to Dec. 31	Mining Revenue	Mining Costs	Tax	Net Profit	Dividend %	Carry Forward
	£	£	£	£	%	£
1952	72,482	49,061	17,685	15,709	5	27,001
1951	70,225	44,432	21,418	12,874	6	28,740

No assessment for the company's claim for War Damage Compensation has as yet been received.

The outlook for the current year is favourable. A new area has been opened up and output for the first six months of the current year amounted to 553 tons compared with 434 tons in the comparable period of the previous year.

The annual meeting will be held in Redruth, Cornwall, on December 1. Mr. Stanley Wickett is chairman.

Scheelite Sales Expands Kramat Pulai's Revenue

That the profit before tax of Kramat Pulai at March 31 last was £15,000 higher than in the preceding year was due almost entirely to the revenue received from the company's output of scheelite (CaWO_4). For the advance in the price per ton received for this product jumped by no less than £1,212 per ton to £1,789 per ton, with the result that profit from the sale of scheelite improved to £20,195 against £4,607 in the preceding year. As can be seen from the table below, the output of tin concentrates declined by 83 tons, although the full impact of this decrease was partly compensated for by a rise in the average price received of a little over £75 to approximately £644 per ton.

Year to Mar. 31	Production Tin Concs. (tons)	Working Profit (£)	Tax (£)	Net Profit (£)	Dividend	Carry Forward (£)
1952	192	12.4	29,688	17,207	12,964	6d. 32,223
1951	275	9.2	24,329	13,622	10,422	6d. 24,509

Taxation was somewhat heavier, and it would appear that the dividend distribution was kept down to last year's rate in order to strengthen the company's liquid position.

From the chairman's statement circulated with the accounts this decision seems prudent. He pointed out that there were indications that the reserves of payable ground were becoming exhausted and that the current selling price for scheelite was considerably below that received during the year under review.

Towards the end of last year companies in the Tronoh-Malaya Tin group formed a new company, Tromal Prospecting Ltd., to examine the areas off the coast of Tongkah in Siam and the progress made since then, Mr. E. V. Pearce said, had been encouraging; one area had been proved to contain payable values and as soon as possible after leases to mine had been issued it was intended to proceed with the equipment of the area.

The company's claims for compensation for war damage and rehabilitation has yet to be assessed. The annual meeting will be held on November 26. Mr. E. V. Pearce is chairman.

Chenderiang Tin Experiences Difficult Year

The year to March 31, 1952, was a difficult one for Chenderiang Tin Dredging. Conditions in the Kris section were not easy, continued blasting being necessary to maintain levels between the working faces and the pumps; while in the Jabus section, working conditions were less favourable than those previously encountered; and finally, the company had to contend with unabated terrorist activity in the district which resulted in frequent attacks on pipe-lines and power lines, and in time lost, to the detriment of operations at the mine.

Year to Mar. 31	Treated (000)	Per Cubic Yard Yield (lb.)	Cost s. d.	Output (Tons)	Per Ton Ore Cost	Per Ton Ore Price*
					£	£
1952	436	0.83	3 4	162	449	563
1951	507	0.83	2 4	196	305	540

*Less tribute.

The effects of these troubles are clearly reflected in the working results shown in the above table. The volume of ground treated as well as tin production declined noticeably, costs rose far above the improvement in the price received per ton tin ore and consequently net earnings showed a big decline. Shareholders shared in the company's misfortunes and their dividend income was halved.

Year to Mar. 31	Gross Revenue	Expenses	Tax	Net Profit	Dividend %	Carry Forward
	£	£	£	£	%	£
1952	113,184	77,998	22,152	13,034	10	14,529
1951	131,013	65,403	25,604	40,006	20	13,346

No assessment for the company's claim for war damage compensation has as yet been received.

Outlook for the current year is that end-year results should be at least as good as those for the year under review, provided security conditions in the district do not deteriorate.

The annual meeting will be held in London on November 28. Mr. Jack Addinsell is chairman.

Gold Coast Selection Trust's Quarterlies

Of the West African gold producers in the Gold Coast Selection Trust group whose results for the last four quarters are given in our table below, only Bremang announced lower profits in the September quarter, compared with the preceding three months.

Company	Profit Figures Including Premium Revenue			
	Dec. Qtr. (1951)	Mar. Qtr. (1952)	June Qtr. (1952)	Sept. Qtr. (1952)
	£	£	£	£
Amalgamated Banket	110,190	87,150	67,617	94,786
Ariston Gold Mines...	151,632	155,265	144,166	166,011
Bremang Gold.....	57,188*	24,428	75,743	59,059
Gold Coast Main Reef	50,387	40,430	37,137	39,334
Mariu Gold.....	41,033	22,732	19,853	35,938

*Total excludes £2,195 recovered from a clean-up.

Ariston Gold announced that on Level 24 the reef on the north ore body averaged 6.7 dwt. over 11 in. for the 1,505 ft. exposed up to the end of the quarter.

The dismantling of Bremang's No. 2 dredge commenced on July 12 and re-erection operations at the new site on the Offin River are proceeding satisfactorily.

Gold Coast Main Reef announced that 1,624 ft. were advanced during the quarter of which 455 ft. were sampled. Of this figure 420 ft. proved payable averaging 10.09 dwt. per ton over a width of 51.6 in.

Company Shorts

Rand Selections Note Offer.—Rand Selection Corp. has announced in a circular to shareholders the offer of £1,600,000 5½ per cent Unsecured Registered Notes to shareholders at par in the ratio of £1 of Notes for every 4 shares held.

The Notes will be payable as to 25 per cent on application and as to 75 per cent on or before January 30, 1953. Each £4 of Notes will carry a free option to take up one new 5s. share at 30s. per share during January 1, 1954.

Anglo American Corporation of South Africa, who are underwriting the offer for a cash commission of 2½ per cent, will also subscribe for 400,000 Rand Selection shares at 40s. To effect this arrangement, the Anglo American Corporation is cancelling its right, obtained under an agreement made last year, to subscribe at any time up to March 31, 1954, for 400,000 shares at 45s. per share.

The new Notes are redeemable at £102 per cent at any time from January 1, 1963 to December 31, 1967, or at £100 per cent after January 1, 1968, by a cumulated sinking fund, which will operate up to September 31, 1972.

Treasury permission has been obtained for the portion of Notes and options applicable to U.K. holders and letters of rights will be sent out on or about December 3, 1952.

I.N.C.O. Again Earns \$3.03 A Share in First Nine Months.—The interim report of the International Nickel Co. of Canada, and subsidiaries for the nine months ended September 30, 1952, shows net earnings in terms of U.S. currency, after all charges, depreciation, depletion, taxes, etc., of \$45,683,360, equivalent after preferred dividends to \$3.03 per share on the common stock.

For the corresponding period in 1951 the net earnings were \$45,734,860, equivalent likewise to \$3.03 per share of common. Net sales for the nine months were \$228,915,593, comparable with \$203,253,035 for the corresponding period of 1951.

In the three months ended September 30, 1952, net earnings were \$12,145,133, equal to 80c. a share on the common, compared with \$16,349,814, or \$1.09 per share, for the corresponding quarter of 1951. Net sales for the quarter were \$71,199,789, comparable with \$71,685,498 for the corresponding quarter of 1951.

Mount Lyell's Copper Output Up 30 Per Cent.—Production of blister copper by the Mt. Lyell Mining and Railway Co. rose by 30 per cent in the year to September 30 last, according to the company's annual report.

The jump from the previous year's 7,044 tons to the latest yield of 9,123 tons resulted from increased supplies of coke enabling the company to treat 39,034 tons of concentrate as against 29,817 tons in 1950-51. This reduced the accumulated stockpile of concentrates considerably, the report stated. Un-smelted concentrates at the end of September contained 2,276 tons of recoverable copper compared with 4,806 a year ago.

Metal content of the blister copper produced during the year was 9,048 (previous 6,990) tons of copper, 28,632 (22,567) oz. of silver and 5,070 (4,277) oz. of gold.

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ROAN ANTELOPE COPPER MINES LIMITED

The following is an abridgment of the statement, dated 7th October, 1952, by the Chairman, Mr. R. L. Prain, O.B.E., circulated to the members.

PRODUCTION

The year to 30th June, 1952, was a record one from the point of view of both the tonnage of ore hoisted (4,368,000) and of blister copper produced (81,027). The rate of hoisting towards the end of the year was running at about 5,000,000 tons per annum, which makes Roan at present the largest underground copper mining operation in the British Empire.

Production for the current financial year should reach about 90,000 long tons of copper assuming no stoppages on account of fuel or other reasons.

After referring to the Company's participation in the prospecting of new areas in Northern Rhodesia, the problem of fuel supplies and the negotiations which had taken place for the supply of power to the Copperbelt from a hydro-electric station to be constructed in the Belgian Congo by the Union Minière du Haut-Katanga, Mr. Prain continued:

COPPER PRICE

For the first eleven months of the year the price was based on the f.a.s. New York export price for electrolytic copper, as reported in the *Engineering and Mining Journal* which has been considered as representing the world price. This remained stable at 27½ cents per lb. throughout that period. At the end of May, however, the agreement which previously existed between Chile and the United States for the sale of Chilean copper in the American market was terminated and, as a result, the New York price immediately increased. For the month of June the average quotation was approximately 34½ cents per lb., but it was not considered that the price of Chilean copper resulting from the breakdown of the agreement was fully representative of world market conditions. A period of instability was thus introduced and at the request of the Ministry of Materials negotiations took place between the Ministry and the Empire producers. These resulted in an agreement to try to stabilize the position until further notice and to-day the price basis stands at 33½ cents per lb. electrolytic.

Mr. Prain referred to claims for increased wages submitted by the three employee organizations on the Copperbelt and to the general question of employee relations. He continued:

DOMICILE

In my last two statements I have dealt at some length with the question of domicile. In the statement I made last January I stated that events were now moving towards a shift in the centre of political gravity for Northern Rhodesian affairs from the United Kingdom to Rhodesia. As a result of the discussions on the subject of the Federation of the two Rhodesias and Nyasaland, and of the political developments both to the south and to the north of Rhodesia, the tempo in this matter has increased rapidly. Your Board, which has been watching the position closely in recent years, decided in May that the time had arrived to carry out the transfer of residence which had been under consideration for so long. Under the existing United Kingdom laws it is, as you know, now necessary to obtain permission for such a transfer and, accordingly, on May 23 application was made to H.M. Treasury for permission to transfer residence to Northern Rhodesia. This decision was thus the logical outcome of the Board's previous views on the matter and will have come as no surprise to Members.

There is much I could say on this subject but since the matter is now *sub judice* it would be improper for me to do so.

FEDERATION

We are naturally closely concerned with the question of the possible Federation of the Rhodesias and Nyasaland. The talks on this matter have now gone so far that it would be dangerous if finality should not be reached. A successful completion of Federation would re-create conditions where investors could be confident about further investments in the Rhodesias. Without such investment it is not only difficult to see how some existing enterprises can be carried on but also a great opportunity will have been missed of opening up these potentially rich territories for the benefit of the Commonwealth and free nations as a whole.

While the Copper Companies have not taken any direct part in this question of Federation, it is interesting to reflect that their enterprise in developing the mines of Northern Rhodesia has perhaps been the outstanding factor making this development possible. Without the copper revenues of to-day, Northern Rhodesia would have little to contribute towards a joint federal enterprise with its southern neighbour. The Companies can take a pride in their contribution to this great imperial development, the outcome of which they will watch with interest and sympathy.

MUFULIRA COPPER MINES LIMITED

The following is an abridgment of the statement, dated 7th October, by the Chairman, Mr. R. L. Prain, O.B.E., circulated to members.

FINANCIAL RESULTS

The gross profit for the year to 30th June, 1952, before taxes and reserves, amounted to £9,269,743. Of this, £1,000,000 was transferred to the replacements reserve and £1,250,000 to general reserve. Taxes absorb £5,651,927, equivalent to about 61 per cent of the gross profit. The Board recommends a final dividend of 5s. 3d., making the total dividend for the year the same as last year, namely 8s. 3d. per share.

After referring to the company's participation in the prospecting of new areas in Northern Rhodesia, the problem of fuel supplies and the negotiations which had taken place for the supply of power to the Copperbelt from a hydro-electric station to be constructed in the Belgian Congo by the Union Minière du Haut-Katanga, Mr. Prain stated:

LABOUR

Following a claim by the Salaried Staff Association for a 15 per cent general increase and the adjustment of certain anomalies, increases in the salary schedules have been made without, however, any overall flat increase. Two other claims, those of the Northern Rhodesia Mine Workers' Union and of the Northern Rhodesia African Mine Workers' Trade Union, are at the time of writing under discussion or negotiation, so it would not be proper for me to comment on them. In any case, we hope they will have been settled by the time you read this. I must content myself with the general observation that the total remuneration accruing to our employees under the various headings is high by any comparable standards. All employees share in the prosperity of the industry through cash bonus schemes which are related to profits, and all enjoy cost-of-living allowances which vary according to an official price index.

Employee relations, in any industry, must be one of management's first concerns. We have tried to make them so in our industry and not, I think, entirely without success. We are now finding what other industries have found, namely, that these relations can become more difficult in times of prosperity. The apparently large gross profits of the copper mining companies are bound to attract the attention of employees. I must emphasize what so many other Chairmen to-day are emphasizing, that the word "profit" is often misleading. For an industry to maintain its productive power and efficiency year after year requires the provision of very large sums which have to be ploughed back into the business. These cannot be charged to working costs and have to come out of the apparent profits, whereas, in fact, they are nothing but an additional operating cost, which under a more enlightened accounting system would show an increase in cost and a correspondingly smaller so-called profit. This year nearly a quarter of the gross profit was ploughed back. It is almost a certainty to say that circumstances leading to higher copper prices will also lead to higher costs of equipment, materials and supplies which we have to purchase to keep the business going year after year by means of replacements and new capital ventures.

TAXATION

I referred last year to the new legislation which the Northern Rhodesian Government then proposed to introduce to enable new mines to amortize their capital expenditure rapidly. This legislation has now been enacted though, under present United Kingdom law, companies resident in this country do not benefit from it. Any tax relief given to them by the Northern Rhodesian Government would merely reduce the double taxation relief available to them in this country, and they would still be subject to the higher United Kingdom tax rates.

In the United Kingdom the past year has seen the introduction of a new and dangerous tax, the Excess Profits Levy. Not only does this add to an already excessive tax burden suffered by industry as a whole, but it is particularly inimical to enterprise and new development.

While the Finance Bill was before Parliament it was amended so as to moderate some features of the new tax as originally drafted. These amendments have materially lessened the impact of the tax on overseas mining companies, but, as you will see from the report and accounts, it remains a severe impost even on an established company. Its worst feature, however, is its effect on an expanding production and, at a time when base metals form so vital a part of the national economy and defence programme, it is clearly wrong to impose a tax which inhibits the development of new overseas mines. So long as the present level and structure of tax in this country prevails, it is exceedingly unlikely that money for Colonial mining enterprises will be invested through United Kingdom companies.

Mr. Prain also referred to the copper price and to the questions of the domicile of the Company and of the possible Federation of the Rhodesias and Nyasaland.

KENT (F.M.S.) TIN DREDGING LTD.**MR. STANLEY WICKETT'S STATEMENT**

The Twenty-Fifth Ordinary General Meeting of Kent (F.M.S.) Tin Dredging Ltd. was held on November 7, 1952, at the Registered Office, Redruth.

Mr. Stanley Wickett (Chairman) presided.

Before proceeding with the ordinary business the Chairman referred to the loss sustained by the company since the close of the financial year by the death on March 6, 1952, of Mr. J. W. Horton Bolitho, who had been a Director from the inception of the company in 1926. His services had been greatly valued, and the meeting stood in silence as a mark of respect.

The Report and Accounts for the year ended December 31, 1951, having been circulated for the prescribed time, were taken as read, as was also the Chairman's Statement, circulated with the report and accounts, which was as follows:—

The Accounts for the year ended December 31, 1951, show a gross profit of £245,961, as compared with £143,354 for the previous year.

Royalty of £63,595 was paid to the Malayan Government before arriving at the above figure, and from the gross profit provision of £147,468 was required for United Kingdom and Malayan taxation. These amounts represent a total contribution by the Company to Government funds of £211,063.

After providing £13,690 for depreciation and for the transfer of £20,000 to General Reserve, Shareholders received dividends of 100 per cent amounting, after taxation, to £55,125 net. The Directors propose that the balance of £30,203 standing to the credit of the Profit and Loss Account be carried forward to the current year.

These results must be regarded as exceptional being due to the record high price received for tin ore during the early part of 1951 and to the large outputs produced by the dredge while working high grade ground.

GENERAL MANAGERS' REPORT

The Report of Messrs. Osborne and Chappel, our General Managers, gives comparative statistics and a brief summary of conditions at the mine. It will be noted that good progress was made with the new river channel and I am pleased to advise Shareholders that in August this year the Batu River was diverted into the new deviation, thus freeing the old bed of the river for work by the dredge.

Shareholders have been advised by postcards of the quarterly outputs of tin ore as follows:—

January—March, 1952	...	2,040 piculs = 121½ tons tin ore.
April—June, 1952	...	1,550 piculs = 92½ tons tin ore.
July—September, 1952	...	2,000 piculs = 119 tons tin ore.

These outputs, although lower than those of the year under review, are very satisfactory and it is anticipated that the ground to be worked by the dredge will for some time be above the average value of the property. With the lower, but less fluctuating price received for tin ore during the current year repetition of results obtained in 1951 is not to be expected, nevertheless a satisfactory year may be anticipated.

In my Statement last year I referred to the company's claim for War Damage and to the first interim payment by the Malayan Government of £18,350 which was offset against the Government advance to the company as shown in the accounts attached. Since the close of the year a second interim payment of £4,598 has been received and offset against the Advance and it is estimated that a further sum of approximately £6,000 will in due course be paid and be similarly offset. In April, 1952, in order to avoid incurring further interest charges, £14,772 was repaid to the Malayan Government, this sum being the estimated balance of the Government Rehabilitation Advance on which interest would be payable, together with the interest due. The relative entries will appear in the next accounts.

Throughout Malaya Communist activities continue to be an ever present menace permitting no relaxation notwithstanding recent successes of the Security Forces. I am happy to be able to tell Shareholders that no incidents occurred at the property and on their behalf I thank our General Managers, the Staff at the Mine and the labour force for the excellent services which they have continued to render to the company over many difficult years.

The Statement of Accounts and Balance Sheet, together with the Directors' Report, were received and adopted.

DIVIDENDS

Anglo-Iranian Oil 5% i (Nov. 28)
 Bisichi Tin 10% i (Nov. 25)
 H. E. Proprietary 5% i (Nov. 28)
 Pato Consolidated Gold 25c. (Nov. 21)
 Petaling Tin 20% i (Nov. 29)

i interim

RAND SELECTION CORPORATION LTD.

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DECLARATION OF DIVIDEND

NOTICE IS HEREBY GIVEN that Dividend No. 75 of 2s. per share has been declared for the year ended September 30, 1952, payable to shareholders registered in the books of the Corporation at the close of business on November 25, 1952, and to persons presenting Coupon No. 76 from Share Warrants to Bearer.

The dividend is declared in the currency of the Union of South Africa, and becomes due on November 26, 1952. Warrants will be posted from the Head and London Offices of the Corporation on or about January 2, 1953.

The dividend is payable subject to the usual conditions which can be inspected at the Head and London Offices of the Corporation.

The Transfer Books and Register of Members will be closed from November 26 to December 3, 1952, both days inclusive.

Holders of Share Warrants to Bearer are notified that the dividend is payable at Barclays Bank (Dominion, Colonial and Overseas), Circus Place, London Wall, E.C.2, or at the office of the Guaranty Trust Co. of New York, 27 Avenue des Arts, Brussels, Belgium, on or about January 5, 1953. Coupons must be left four clear days for examination.

The effective rate of Non-Resident Shareholders' Tax is 6.6 per cent.

The profit for the year, after providing for taxation, was £723,000 (previous year £697,000).

By Order of the Board,

For and on behalf of

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED.

London Secretaries.

W. E. GROVES.

London Office:
 11 Old Jewry, E.C.2.
 November 10, 1952.

Mining Matters

The Council of the Institute of Metals has announced that it will present two prizes of 20 guineas each (half in books) for the best essays submitted by student members, and associate members of local sections eligible for student membership within the age limits of 17 to 25 years.

The choice of subject is left to the competitors. Subjects relating exclusively to extraction or ferrous metallurgy are ineligible, but the subject matter should have a metallurgical content.

Oakland Metal Co. have announced that they have been appointed sole selling agents in Western Germany for Khasi sillimanite by the suppliers, Messrs. Assam Sillimanite Ltd. In addition to sales to Western Germany, Oakland Metal are effecting shipments to the U.K. and elsewhere.

Obituary

PHILIP MURRAY

The death is reported last Sunday of Mr. Philip Murray, one of the triumvirate of the three great American labour union leaders, at San Francisco where he had gone to organize the forthcoming Convention of the C.I.O.

Mr. Murray was born in the Lanarkshire coalfields in 1886, and in 1902 his family migrated with him to the United States where he became naturalized a few years later. He was early one of the leaders in the United Mineworkers of America, in which he was associated with Mr. John Lewis for some 30 years, until they quarrelled in 1942. After the first world war he joined Mr. John Lewis in founding the Congress of Industrial Organizations, which covered a large number of industries based on industrial grouping rather than on crafts which was the practice of the American Federation of Labour, and a fierce rivalry developed between the two organizations. On the whole, Mr. Murray's policy was one of support for the Administration both in the first and second world wars and he was opposed to the isolationism associated with Mr. Lewis' attitude. Latterly the success which attended Mr. Lewis' policy of capitalizing the United States need for fuel in securing additional wages and privileges for his miners appears to have forced Mr. Murray's hand into putting forward increased wage demands, enforced by strikes, in the steel and metal industries, which are likely to figure extensively in the forthcoming meeting of the C.I.O. at Los Angeles.

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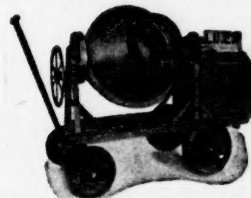
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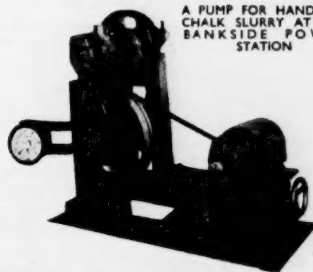
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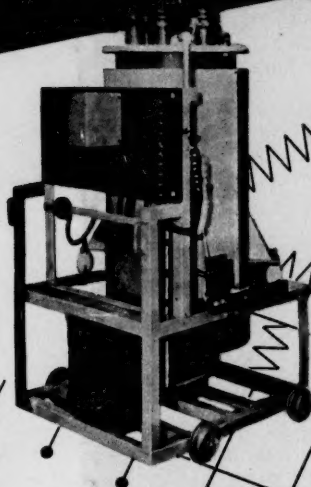
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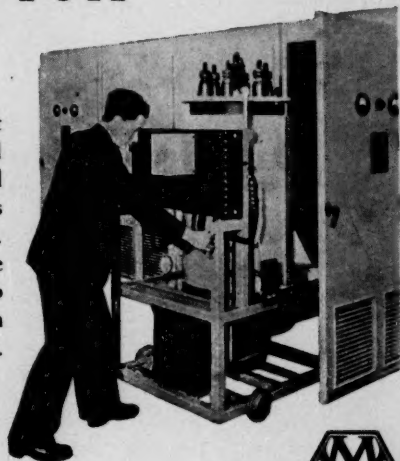
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